Smithsonian

ECEMBER 1999

Keeping Time Across the Centuries

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How do you measure success?

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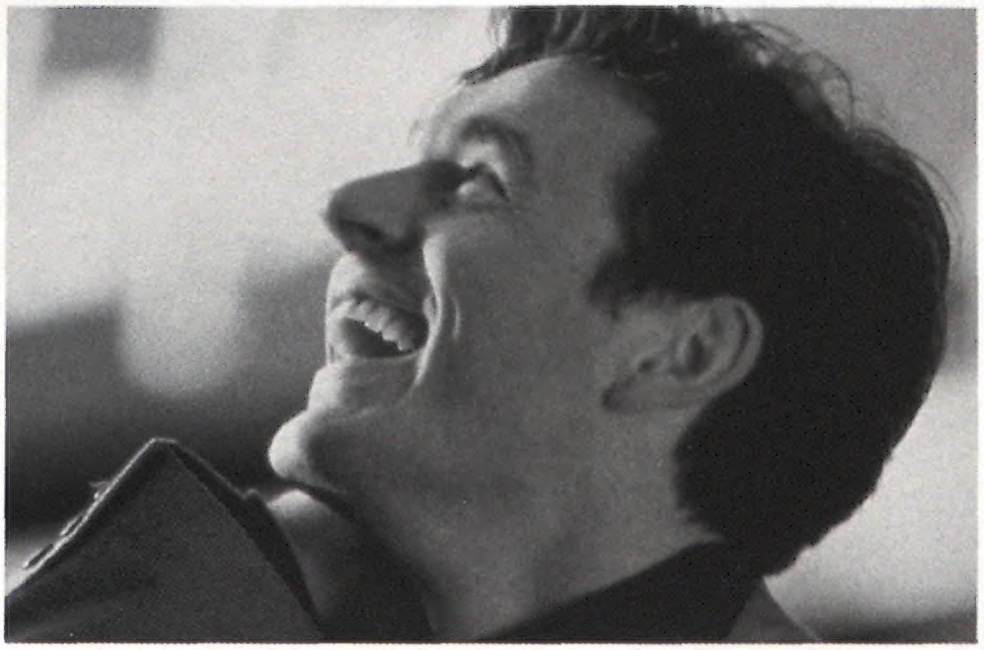

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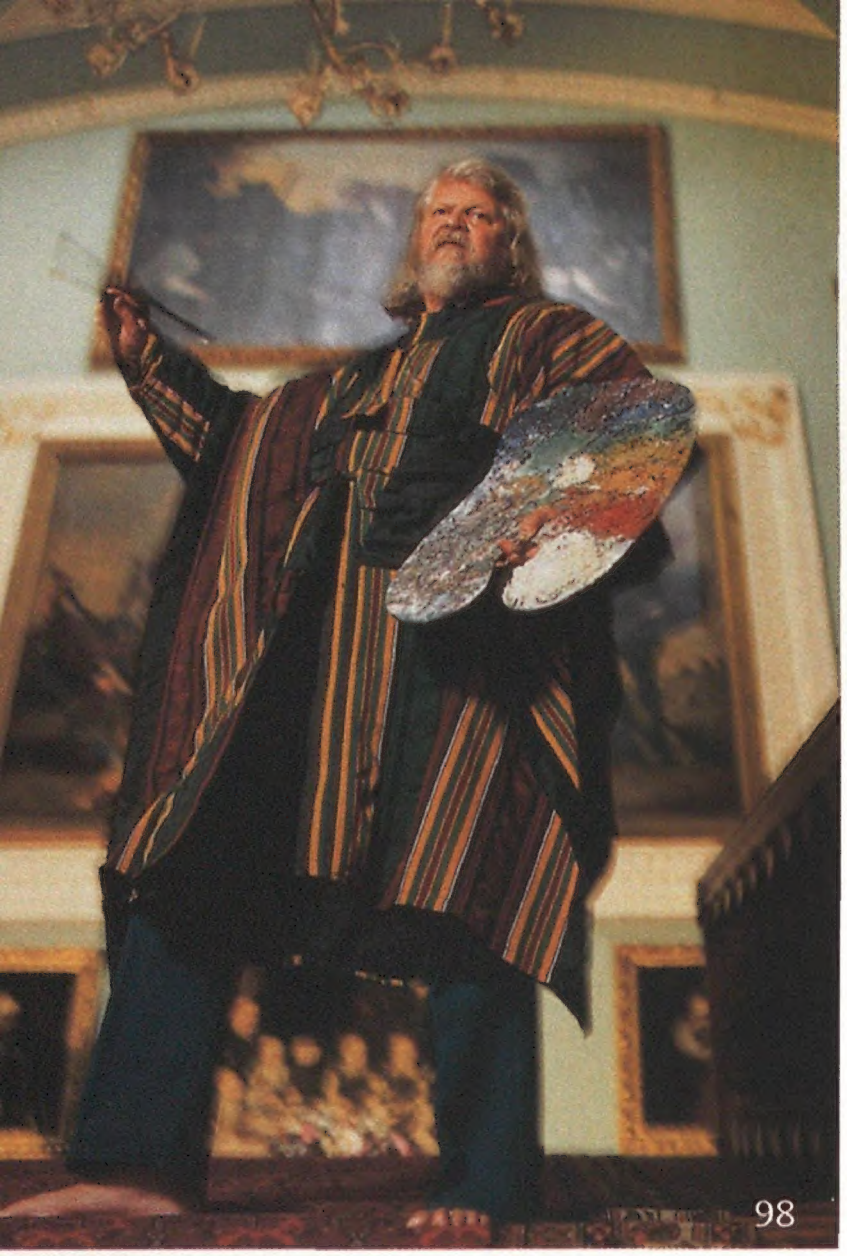
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AN AROMATIC MASSAGE.

FOLLOWED BY A SEAWEED WRAP.

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FOLLOWED BY A RENDEZVOUS IN A LITTLE BISTRO
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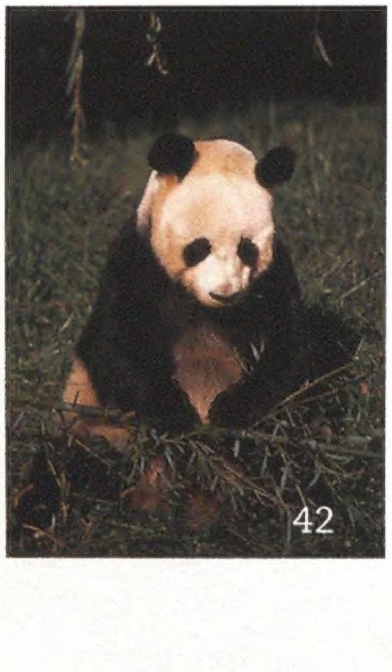

Cover Manufactured by Massachusetts' Waltham Watch Company, this pendant watch (c. 1885) boasts a rare rock-crystal top plate for viewing the works. Its craftsmanship is typical of Waltham quality, called "incredible" by one Swiss competitor.
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Charles Schwab on investing

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"Dennis is busy running his own construction business and I'm busy because we're a very active family," says Kathleen.

"Managing our investments became too time consuming," says Dennis.

"The stress load was building," adds Kathleen.

So what did you do?

"We found an independent investment manager who works with us as a team," says Kathleen. "She's helping us plan for our goals—college for the boys, retirement..."

So you're happy with your choice?

"Absolutely," says Kathleen. "She's a wonderful teacher. We feel very comfortable."

"She's helped us go in the direction we want to go in," Dennis adds.

Getting an independent investment advisor can be smart. Especially if you're at the point in your life where you could use some ongoing advice.

Kathleen says, "Our investment manager has a lot of experience. She's just what we needed."

"We really trust her," says Dennis.

"She even spent two hours with our boys explaining how their college money is invested," adds Kathleen.

Any last thoughts on your advisor?

"It's the best decision we've made in the past couple years," says Dennis. "It's de-stressed my life and added to our quality of life. Ultimately, we hope it will help us reach our goals, not only for ourselves but for our family."

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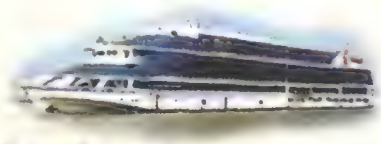

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PERSPECTIVES

Looking to the Future

FIVE YEARS OF HEADING THE SMITHSONIAN CONTINUES A PROUD LEGACY, BUT MUCH REMAINS TO BE DONE

WHEN I BECAME SECRETARY OF THE SMITHSONIAN IN SEPtember 1994, I found a thriving institution that my predecessor, Robert McC. Adams, had presided over for ten years. He left me in charge of a remarkable place, broad and deep enough to fulfill the mission defined by its benefactor, James Smithson: "the increase and diffusion of knowledge." Here, distinguished research is accomplished in the sciences and the humanities, and public education abounds through exhibitions, publications and programs. Each Secretary takes responsibility for millions of objects held in trust for the nation and for the myriad purposes for which our distinguished staff uses those items.

I inherited from Secretary Adams, as well, a number of initiatives that he had tendered and that would come to fruition on my watch. One of the greatest of these was planning for the National Museum of the American Indian. In my five years we have seen the opening of the George Gustav Heye Center for exhibitions in New York City, the start-up of the transfer of about a million objects to a beautifully designed resource center in Maryland, and the joyous groundbreaking for the Mall museum in September. Following up on Secretary Adams' passion for diversity at the Institution, I launched a process that led to the creation of the Smithsonian Center for Latino Initiatives and the new Asian Pacific American Studies Program.

Every Secretary works especially hard on Smithsonian needs that he has identified. I am no exception, and I leave to my successor, Larry Small, as Bob Adams left to me, several projects that require continued attention to succeed.

One is to increase resources so that the Smithsonian can continue in the forefront in exhibitions, research and education. Federal appropriations might be increased, but my sense is that fundraising through an Institution-wide campaign (which has already begun with substantial gifts) is a necessity. We have set forth important needs: construction of the National Museum of the American Indian, construction of the Dulles Center of the National Air and Space Museum, extensive renovation of space and exhibitions in both the National Museum of American History and the National Museum of Natural History, and the acquisition of a building to expand the activities of the National Museum of American Art, the National Portrait Gallery and the Archives of American Art. In addition, we need to increase endowments for further enhancement of research and exhibition programs. Endowment income permits the Institution to support exhibitions for which outside sponsorship is unavailable, to fund new staff of exceptional quality, and to increase the number of interns and graduate fellows, who both learn and produce important research and analyses critical to collection maintenance and exhibition. So far, we have made good progress, but the task is less than midway toward completion.

One source of additional program funding is income from Smithsonian Ventures—museum shops, catalogue sales, product development and licensing, media enterprises and undertakings we haven't even thought of yet. The reorganization of these activities is in progress. Success, however, requires additional effort.

Another new initiative is the endeavor to take the Smithsonian presence beyond Washington. Four major programs that we are pursuing involve affiliations with museums around the country, the realization of our plans to create a virtual museum on the Internet, increasing traveling exhibitions and building a more extensive presence in the world of K-12 education. All entail measured Institutional growth and related expenses. We have made important beginnings, but there is still much to do.

Moreover, we must ensure the continued quality and enrichment of our core activities: museum exhibitions, and ongoing research in the sciences, humanities and social sciences that supports our exhibitions and educational programs and produces new basic knowledge.

Finally, we should not let our efforts lag in ensuring that the Smithsonian belongs to all Americans and includes many histories and cultures. We have made good beginnings but must continue our efforts throughout the Institution.

These are tall orders, but I am confident that our new Secretary, the 11th, will produce substantial gains for the Smithsonian in these activities and in others that he will launch and bequeath to the 12th Secretary. Ours is a great legacy. I am proud to have been entrusted with it for five extraordinary years.

I. Michael Heyman

I. MICHAEL HEYMAN, SECRETARY

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GRITS

I ENJOYED TIM WARREN'S ARTICLE "True Grits," in the October 1999 issue, for good reason. In the fall of 1997, while attending undergraduate space and missile training at Vandenburg Air Force Base in California, I went through a basic course on the composition and structure of the sun. Our instructor, Captain Smith, whose Southern accent was thick enough to slice with a knife, attempted to describe the roiling convective layer of the sun as going "bubbly, bubbly, like a pot of grits." This prompted a side discussion after another student raised her hand and asked, "So, what is this fascination with grits, anyway?" After a brief pause, Captain Smith answered, "Let me put it to you this way: if you put a bowl of grits on your head, your tongue'll slap your brains out tryin' to get 'em."

Thus ended the lesson.

Steven A. Riegel, Captain, USAF
Cheyenne Mountain Air Station, Colorado

AS A YANKEE, MY OWN DEFINITION of grits is buttered kitty litter.

Cherry B. Cook
Keo, Arkansas

IN ONE PART OF A LAURIE ANDERSON performance piece, a wary Northerner asks, "What are grits, anyway?" To which the waitress replies, "Grits are fifty cents. They're extra."

Jack Lewis
Mt. Vernon, Kentucky

LET ME GIVE YOU AN IDEA OF HOW far grits have come. In 1950, as a young U.S. marine on my first assignment to Washington, D.C., I got off the train and stopped for breakfast near Union Station. My scrambled eggs came with toast and beans. Beans? I pointed to my plate and asked the waiter, "Where are my grits?" He looked me dead in the eye and said seriously, "I'm sorry, sir, but we don't serve foreign food here."

Don Grantham
Dearing, Georgia

THE DEVIL

ROBERT WERNICK'S AMUSING YET incisive article "Who the Devil Is the Devil?" was a delight to read. Another literary gem in the Faustian vein not mentioned is the Stephen Vincent Benét short story "The Devil and Daniel Webster," which was faithfully adapted as the 1941 movie of the same name. Walter Huston brilliantly plays Mr. Scratch, who entices New Hampshire farmer Jabez Stone (James Craig) to sell his soul for gold and "all that money can buy" (the film was also released under that title). After seven years of wealth and success, Stone's debt came due. He had become increasingly rich, ruthless and cold, and didn't want to pay Scratch, so he hired the renowned and eloquent orator and attorney Daniel Webster (Edward Arnold) to argue his case and win back his soul.

George Seifert
Ames, Iowa

PETER COOK PORTRAYED A SUAVE and sardonic Devil in the 1967 comedy *Bedazzled*, another adaptation of the Faustian legend. His swinging, cool George Spiggott bargains with Dudley Moore, a despairing burger chef named Stanley, who is hopelessly in love with an indifferent waitress played by Eleanor Bron. Moore gets the usual seven chances to win Bron. Cook's Devil makes the usual mischief, but runs his operation like a business in a seedy basement club. He faces all the stresses of a modern executive, including unreliable help in

In *Charlie Chan at the Opera* (1936), Boris Karloff dressed as Mephistopheles for a Faustian production.

the form of the Seven Deadly Sins (Raquel Welch plays a red-bikini-clad "Lillian Lust"). Fed up with squandered souls and the mess mankind has made of itself, he simply wants to wend his way back into Heaven. In the end, the Devil is like the rest of us, stuck working in an imperfect world and fighting for his soul.

James Grady
Takoma Park, Maryland

IN C.S. LEWIS' *THE SCREWTAPE LETTERS*, an older Devil named Screwtape instructs not an Englishman but a younger Devil, his nephew Wormwood. The Devil advises Wormwood on the best ways to lead humanity astray. The power of the book is the revelation of the diabolical methods of the Devil through the epistles to Wormwood, which the elder Devil signs, "Your affectionate uncle, Screwtape." This Devil is shown to be very happy that no one makes a fuss over him. He would much rather have people think of him as being dressed up in tights and sporting horns than as he truly is.

Eric N. Runion
North Chili, New York

THE DEVIL MAY BE EVERYWHERE, BUT he isn't in the details. That role belongs to God. How do I know? I read SMITHSONIAN. In August 1991,

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the magazine ran an article entitled "The 'Pope' Who is Revising Our Bible of Sayings," by Ralph Graves, about writer-editor Justin Kaplan and the newest edition of *Bartlett's Familiar Quotations*. That story cost me $42.77 for a copy of the book. Item two on page 783 identifies Anonymous as giving us the saying, "God is in the details," and who am I to question him, or her?

John Schroeder
Wayjesha, Wisconsin

In common usage, this saying may be applied to good or evil: the details may lie with God or the Devil. Ed.

NOT LONG AGO, I VISITED KAUNAS, Lithuania, where the Museum of the Devil is devoted solely to his history and lore and the art depicting him.

Edward J. Palecki
Macon, Georgia

PHENOMENA, COMMENT & NOTES

I READ JOHN P. WILEY, JR.'S COLUMN "NASA Goes Ballistic," in the October 1999 issue, with special interest. In the early '60s, I was one of the first employees of the fledgling U.S. Geological Survey Branch of Astrogeology, headed by Gene Shoemaker.

Gene's curiosity was boundless; his mind was sharp and quick. The depth and breadth of his knowledge seemed limitless. He once picked up a tarantula that was crossing a road near our offices, and spent the afternoon encouraging everyone who came by to observe it, before returning the creature to the roadside to resume its journey. From Gene I learned that tarantulas are intelligent—and curious about us, too.

His quiet humor and twinkling eyes belied what must have been a great sadness at not being able to journey into the far reaches of space himself. I was pleased to learn that Gene's final resting place is on the moon.

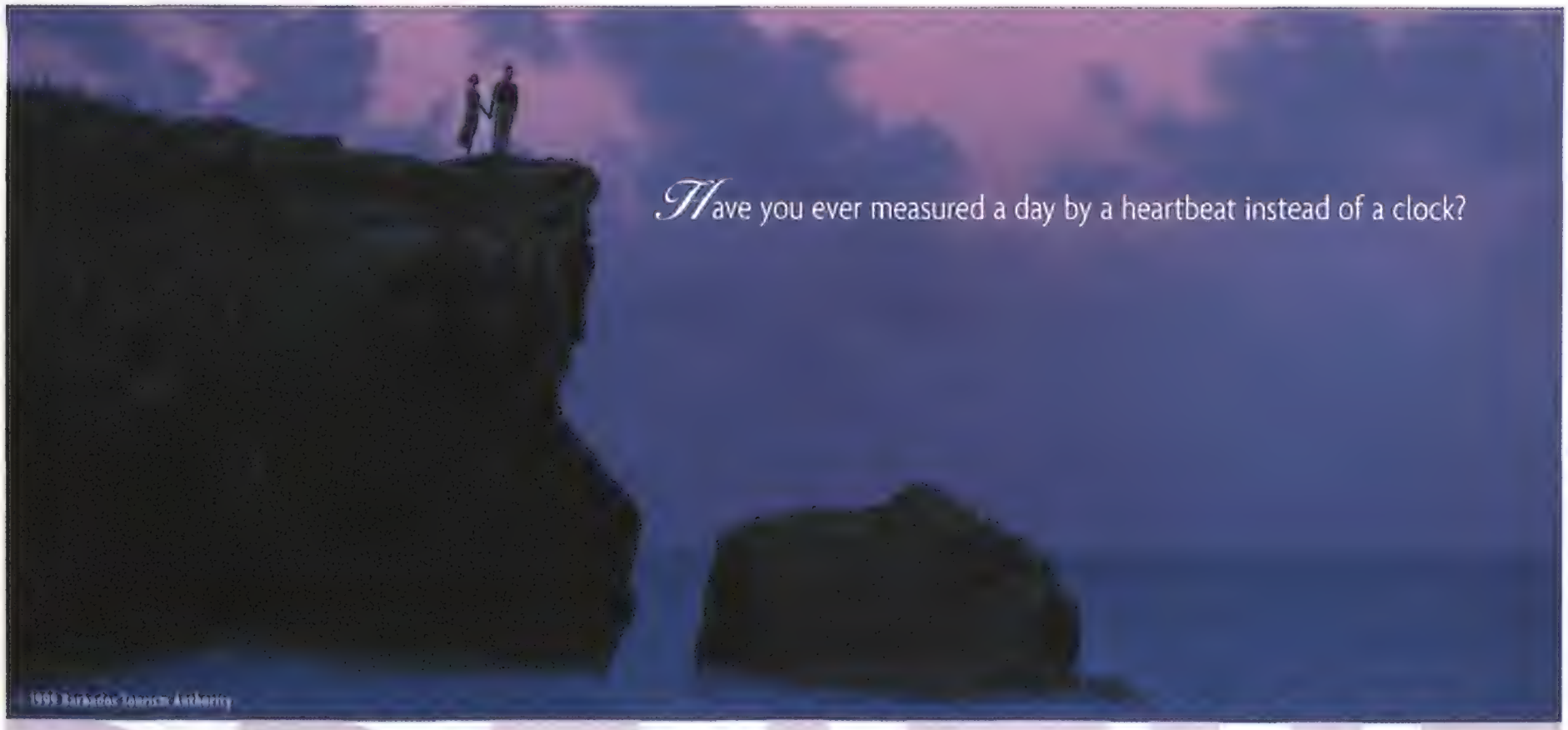
Anne Kelly Umphrey
Concord, Massachusetts

I HAVE A MESSAGE FOR NASA: THERE is no water on the moon. Get over it.

Albert F. Wooten
Winter Park, Florida

BRASSAÏ

THANK YOU FOR AVIS BERMAN'S article "The Eye of Paris." In the movie *Titanic*, Leonardo DiCaprio (Jack) shows Kate Winslett (Rose) some drawings he did in Paris, including one of an old woman who, he said, had once been the mistress of a government official but had fallen on hard times. In the drawing, she was draped in cheap jewelry and was called "Miss Diamonds." The sketch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was drawn from a photograph of a woman named Bijou that Brassaï took in 1932, twenty years after the *Titanic* sank.

Fred Schoonmaker
Visalia, California

The National Gallery of Art is exhibiting the photograph of Bijou of Montmartre, an aging courtesan, in "Brassaï: The Eye of Paris" through January 16, 2000. Ed.

JAMES J. HILL

MINNA MORSE'S "THE FIRST EMPIRE Builder of the Northwest" did not include one of the more dramatic episodes in the career of James J. Hill, when he and fellow railroad man Edward Henry Harriman laid track south through the Deschutes River Canyon in Oregon.

Using opposite sides of the river in most places, the crews of Harriman and Hill fought hand to hand, sniped at each other, detonated one another's dynamite caches, diverted supplies and committed general mischief against each other. Advance men secured rights of way to impede their competitor. Finally, Hill and Harriman had to join efforts and laid one single track.

Pat Ingram
Bend, Oregon

YOUR ARTICLE MENTIONED A PALACE that James J. Hill and his wife built overlooking the Mississippi River. On a bluff high above the Columbia River Gorge, just north of Portland, Oregon, there is a building called Maryhill Museum of Art that I have always understood had been the home of the Hills. Did they own both of these homes?

Robert S. Fiedler
Boise, Idaho

The son-in-law of James and Mary Hill, Samuel Hill, purchased 6,000 acres of land along the Columbia River, intending to establish a Quaker colony. He began building his steel-and-poured-concrete mansion in 1914. The museum houses his collection of Auguste Rodin sculptures. Ed.

THE LAST PAGE

AH, WHAT WONDERFUL MEMORIES the column "This Is My Grandfather's Oldsmobile" by Andrew Cohen brought back to me. In 1967, my 76-year-old grandmother, Moe, decided to buy a new car, one that she wanted, figuring it would be her last. She chose a Pontiac Firebird—a gleaming white, low-slung, racy little number with a 327 engine and automatic transmission. She never took it over 45 miles per hour.

It was the first car I ever loved, even though I was only 10 when she

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bought it. I'd sit behind the wheel, parked at the curb, and look down that long, sweeping hood and imagine myself racing the wind.

In 1981, the Firebird broke down on a Southern California freeway just before rush hour, as it was ferrying Moe from her garden club meeting. The family decided that Moe, at 90, and the car, at 220,000 miles, were becoming a threat. The car went into my aunt's garage; my grandmother went into a retirement home. She died within two years.

I drove the car until the block cracked. Heartbroken, I sold it for next to nothing to a mechanic, who replaced the engine and gave the car to his daughter.

Three years later, I saw the Firebird drive by; the car continued to bear the telltale dent from a 1980 altercation with a light pole. This little piece of Granny Moe was still very much alive and, as far as I could see that day, still racing the wind.

Julie Ann Bouché
Dallas, Oregon

BORDER COLLIES

I ENJOYED TIMOTHY FOOTE'S ARTICLE "A Good Dog Knows What to Do." When I was 9 years old, I was given a copy of an old book called *Bob, Son of Battle*, and was forever launched into the dream of having a shepherding collie. As I grew up, I moved often with my parents, both teachers, who searched for more adventurous teaching positions. The transient lifestyle meant we lived in apartments and we had, at different times, a number of pets, including fish, mice or cats, but never a dog.

I never lived with one until I was a junior in college. My husband presented me with a Border collie puppy for my birthday. Nikki became my constant companion, running alongside me as I biked to classes and patiently waiting for me (and guarding my bike) until I was finished. She raced miles to my five on our daily jog, endlessly chased tennis balls or Frisbees, and even tolerated our move from Eugene to Portland, Oregon, when my husband and I graduated and found jobs.

Nikki never lived on a farm or herded sheep, but she did a fair job of keeping the neighborhood children and cats in line. At 45 pounds, she once intercepted two much larger dogs that had attacked me as we came around a fence, and her ferocity in protecting me was stunning. She won. Her pink tongue, pert ears and twist of her head when someone spoke her name endeared her to everyone she met.

I never had a more intelligent or more loyal friend, and from the day we brought her home until 14½ years later when she departed for "those sheep fields in the sky," she was the quintessential Border collie. Nikki's mission in life was teaching her human to be as smart as a dog.

Debra Mathews
Lake Oswego, Oregon

READERS WHO ENJOYED YOUR ARTICLE may be amused by "Footrot Flats," a comic strip based in New Zealand. For nearly 25 years, a Border collie, who angrily refuses to tell us his name, has been observing life on Wal Footrot's sheep farm. Examples of the strip are to be found on several Websites.

Andrew Ahlgren
Washington, D.C.

THE OBJECT AT HAND

VALERIE JABLOW'S COLUMN "OTHMAR Amman's Glory" brought back some very fond memories. I lived in Washington Heights and followed the day-to-day construction of the George Washington Bridge. When it was completed, an entire phalanx of dignitaries and my own Boy Scout troop marked the day as one that was never to be forgotten.

Bill Santoro
Kingston, New York

WRITE TO SMITHSONIAN

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(signed) Carey O. Randall
Associate Publisher, Administration

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When the Earth Froze

THE ROCKS TELL US THAT AT LEAST TWICE, THE EARTH HAS FROZEN OVER FROM THE POLES TO THE EQUATOR

BY JAMES TREFIL

Graduate student Galen Halverson inspects dark glacial debris (note the boulder) sandwiched between carbonate deposits.

DANIEL SCHRAG

CLIMATE-CAUSED "END OF THE WORLD AS WE KNOW it" stories in recent years have concentrated on a warming planet: cities underwater, permanent droughts, extinctions. It looks more and more as though in the past, however, cold had even more dramatic an impact than the putative warming is predicted to be having now. Glaciers that came as far south as New York and Wisconsin, as some did 18,000 years ago, were not the problem. No, the whole earth—including the oceans—froze over. We were a blinding white Christmas tree ornament in the blackness of space: "snowball earth."

The latest intimation that there might have been such episodes came from geological formations in Africa. In Namibia (and in other places) strange sequences of rocks were laid down on the bottoms of long-vanished oceans between 550 million and 750 million years ago. Layers of jumbled rocks (presumably brought there by glaciers) are overlain by a type of rock called carbonate, which indicates intense weathering. For six summers, Harvard geologist Paul Hoffman labored in the African heat to study these sequences, while his colleague, geochemist Daniel Schrag, interpreted the results of painstaking chemical analyses.

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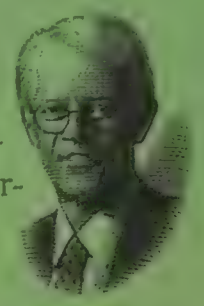

— PETER LYNCH

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"The carbon isotopes in those rocks tell us that for millions of years the earth was frozen over," says Schrag. "But while the ocean was biologically dead and the land covered, the interior of the planet was working just fine."

To understand this, you have to look at the earth's carbon cycle not from the relatively short timescale of human beings but from the grand view of the geologist. Over millions of years, carbon is brought up from the interior and emitted into the atmosphere as carbon dioxide by volcanoes. When rain falls, some of the carbon dioxide in the air combines with the water to become a weak solution of carbonic acid. This in turn dissolves granite, beginning a process that ends in calcium carbonate (the stuff of seashells and marble) being present in the runoff that eventually reaches the sea. There it precipitates out of the seawater and falls to the ocean bottom, where the tons of pressure turn it into carbonate rock.

"During the great freezing," says Schrag, "carbon dioxide levels in the atmosphere dropped, the earth's temperature fell to around 58 degrees below zero, and the ice covered everything—ocean and land alike." Glaciers moved down from the mountains, dragging along rocks and the rubble that would be left behind when the ice melted.

Once the world iced over, carbon dioxide brought up by volcanoes could no longer be removed from the atmosphere: there were no rivers, no rain or snow and no weathering. For millions of years, carbon dioxide levels climbed, eventually rising to about 300 times what they are today. At this point the greenhouse effect took off with a vengeance and the ice melted back, dropping the glacial rocks onto the ocean floor. Rain began falling again, the resulting carbonic acid dissolved granite again and the whole process cranked up once more. The layer of glacial debris left behind on the ocean floor was covered by another layer of carbonate. These are the layers we see today in places like Namibia. "We have pretty good evidence that the earth went through this cycle at least twice," says Schrag, "and maybe as many as four times."

But if you accept that the snowball event happened (perhaps many times), there are still some questions that need to be answered: How did the earth get into a frozen state in the first place? Could it happen again, and how could any life survive such an event at all?

To discuss these questions, I talked to a man who makes his living producing computer models of planets and their atmospheres. Ray Pierrehumbert, of the University of Chicago, has thought deeply about the evolution of the atmosphere on Mars, as well as the greenhouse effect here at home, and was among the first theoretical scientists to think seriously about the snowball earth scenario.

"The big hole in the [snowball earth] theory right now is understanding how you get the earth to freeze over," he says. An asteroid impact could do it, by throwing up a worldwide layer of dust that would shade and thus cool the planet, but to Schrag this seems an unlikely scenario if snowball events happened repeatedly. Most scientists assume that the freezing had something to do with the levels of carbon dioxide in the atmosphere. Just as adding carbon dioxide can make a planet warm up, removing it can make it cool down. Currently, there is some argument about how low carbon dioxide levels have to be to initiate freezing, but there is a general consensus that low levels are the culprit.

So, should we all start investing in snowmobiles and parkas? Could there be a snowball in our future?

The answers, of course, depend on what we think caused snowballs in the past. The scientists I talked to didn't seem too concerned—after all, it's been about 600 million years since the earth has had this sort of problem. Everyone noted that the sun was 6 to 7 percent dimmer back in those days.

Photosynthetic algae could have survived in localized warm refuges (around undersea volcanoes, for example).

What interests me most is the question of how any living thing survived the event. When I ask scientists about this, they become a little evasive. Remember, though, that at this time life on earth was confined to the ocean, and consisted predominantly of single-celled organisms. If you think of a planet populated exclusively by green pond scum, you won't be far off. It's possible that photosynthetic algae could have survived in localized warm refuges (around undersea volcanoes, for example), in water trapped in spongy ice, or in seasonal meltwater lakes near the tropics. Life can survive in these sorts of environments in today's Antarctica. But which of these escape routes life actually took, or whether it used a different, as yet unimagined strategy, is a question for future research.

Daniel Schrag points out one interesting thing about the relation between snowball events and life. "Multicelled life on earth developed soon after the last snowball ended," he says, "and there is some (equivocal) evidence that it tried to start up between snowballs, only to be wiped out each time." It may be, in other words, that only single-celled life can survive such total freezes and that the development of complex life-forms had to wait until they no longer occurred.

Only when the freezes stopped did evolution produce beings so complex that they can read the story in the rocks and tell us that the earth was once much different from what it is today.

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The Beauty of Ireland

To fully experience Ireland you must get outside, breathe its clean air and feel the gentle blessing of its mists. And don't forget to bring your camera. Ireland is called the Emerald Isle with good reason, but there's so much more to its beauty and natural riches than lush fields of green. Boldly jutting into the Atlantic, off the west coast of Europe, Ireland is ideally situated to benefit from the leavening effects of the mighty Gulf Stream, which gives the land its temperate climate and abundant rainfall. This creates a hospitable environment for a wide diversity of wildlife that offers the photographer abundant opportunities for fabulous picture taking.

A small country of 32,554 square miles, Ireland is also sparsely populated (just 4 million), a combination of circumstances that means the natural world is unspoiled and usually close at hand. Wherever you go by car, bike, on foot or by boat, turn your head and yet another breathtaking vista will present itself: the rolling farmlands of the east, the rugged coast of the south, the craggy mountain roads of the west, the elegiac, dramatic isolation of Connemara. Be prepared to stop, admire and snap great shots of Ireland's beautiful horses or herds of grazing sheep (sometimes being driven down the same road you're traveling!), not wildlife in the strictest sense, but animals lovely to look at in the verdant pastures.

By Malachy Duffy

Inn Style

Be equally prepared to stop on your travels and experience Ireland's greatest natural asset: its people. Here the word "welcome" is taken seriously. Everywhere you go, there are lively pubs, where you'll be invited to have a "pint" and listen in on a local tale. Please your palate at a wide range of terrific restaurants—whether it's a local spot for a hearty lunch and a bite of Ireland's unmatched farmhouse cheeses—or dinner at one of the great country houses featuring star-quality cuisine. There are also many fine places to stay, from cozy B&B's to award-winning castles.

Take Home Memories in Living Color

Journey down a country road and you will be surrounded by a wall of hedgerows punctuated with the riotous colors of wild freesia. Walk through a field, and you spot a wily fox or a quick brown hare. Visit a garden, and be treated to the sight of a shy hedgehog. And then there are the birds. Ireland boasts more than 60 designated sanctuaries. Not only are there over 400 indigenous species, but Ireland is also a major stopover for migrating birds. Be sure not to miss one of Ireland's most striking natural features, a vast limestone field called *The Burren.* Located on the west coast, by the spectacular Cliffs of Moher (where you can watch the aerial ballets of thousands of seabirds), *The Burren* is a unique biosphere. It's the only place in the world where both Mediterranean and Alpine plants and flowers are found together for reasons yet unknown.

Go for Greener Pastures

To really experience nature in Ireland, go on foot or on bike. Enjoy an extensive network of beautiful walking trails, called *Ways*, that meander over 1,700 miles. There are also clearly delineated bike trails that will take you to seashore, meadows and mountains. Among the many opportunities for outdoor activities is horseback riding. There are over 150 equestrian organizations to help you with the ride of a lifetime. Windsurf off beautiful Curracloe Beach (where Steven Spielberg filmed the dramatic landing scenes of "Saving Private Ryan"), or play a round of golf on one of many world-class courses. Nature in all its glory is never far away in Ireland, so have your eyes and camera at the ready for breathtaking photo opportunities. There is, however, one thing you will not see. Snakes. A certain St. Patrick took care of that problem years ago!

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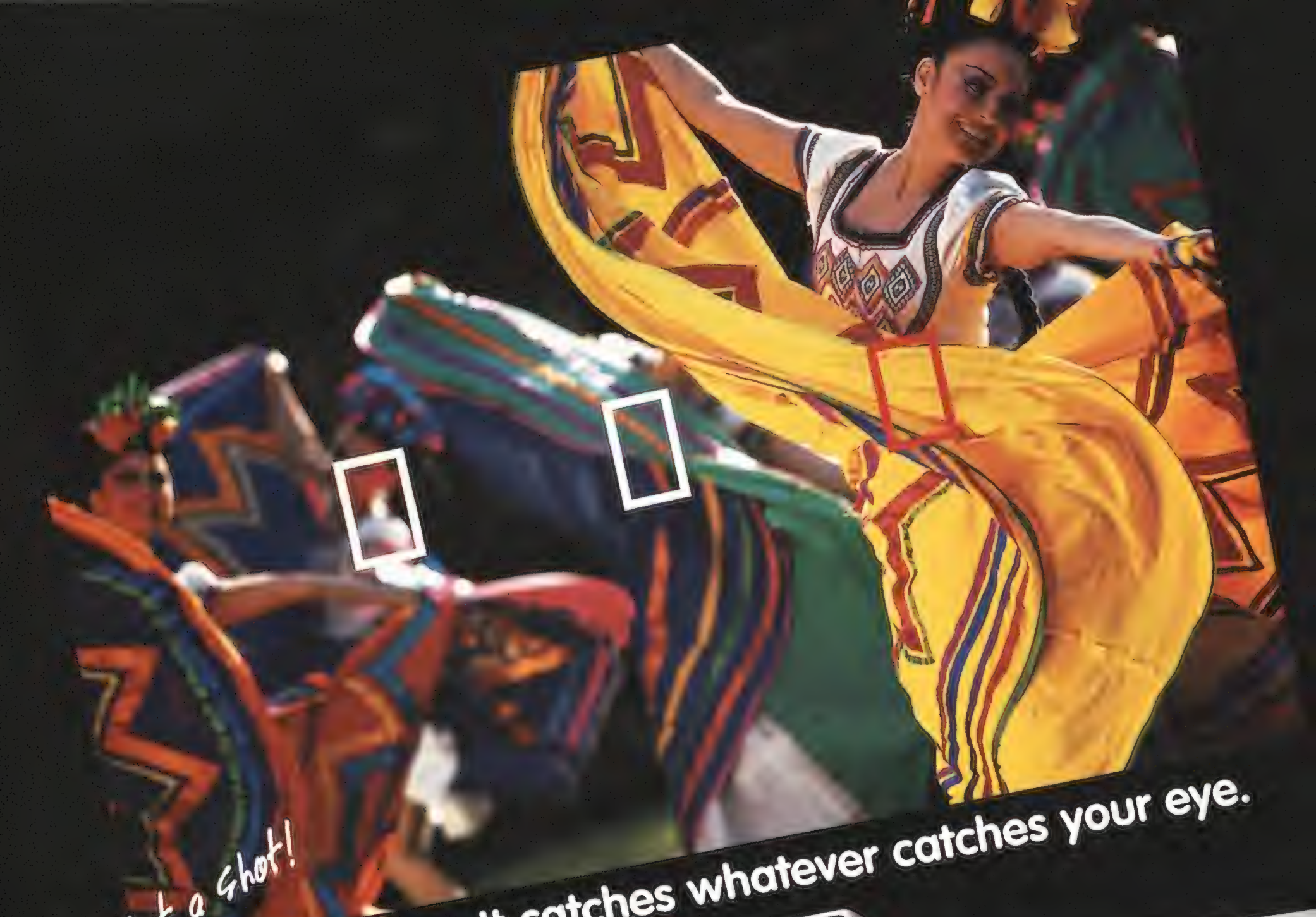

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Photo by: Larry Dale Gordon

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Sea of Cortez & Copper Canyon *May 2-9* Aboard the *M.V. Yorktown Clipper*

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NEW! **Napa Valley Food & Wine** *April 28-May 2*

Pacific Northwest Arts & Crafts (Seattle) *May 10-14*

continued on page 159

A Sampling of Learning Adventures for Smithsonian Associates

THE OBJECT AT HAND

Washington Slept Here

A LOOK AT THE FIRST PRESIDENT'S "BEST BED" LEADS TO A RECOLLECTION OF THE REAL MAN AND HIS EXEMPLARY LIFE

BY TIMOTHY FOOTE

The young George Washington inherited this bed, together with Mount Vernon and the rest of its contents, from his half-brother Lawrence Washington in 1761.

"I NOT BEING SO GOOD A woodsman as the rest of my Company striped my self very orderly & went in to the Bed as they call'd it when to my Surprize I found it to be nothing but a Little Straw—Matted together [and] one Thread Bear blanket with double its Weight of Vermin such as Lice and Fleas &c." Thus George Washington, at age 16, confided to his diary. The year was 1748. He was largely self-taught, far from home, trying to learn the surveyor's trade.

Eventually the father of his country would sleep in a very great number of beds, so that one of them seems suitable enough as an object at hand. All through the 1750s he traveled the Western wilderness, first as a surveyor, then as a colonial officer. He had two horses shot out from under him in battle, helping England fight France for possession of the continent. After some years building up Mount Vernon as a farm, in late 1774 and again in May he was off to Philadelphia as a delegate to the Continental Congress. He would be back soon, he wrote Martha after he left Mount Vernon, but it was eight and a half years before he got home for good.

Instead, he had to go straight to Cambridge, Massachusetts, as Commander in Chief of the new Continental Army in what was fast becoming the American Revolution. Thereafter he was on the move, fighting and retreating hither and yon, skillfully keeping his ragtag army in being. "If I were to wish the bitterest curse to an enemy," Washington wrote his cousin, "I should put him in my stead." As the plight of the Colonies seemed more and more hopeless, Washington was offered dictatorial powers. He declined to use them. He threatened to resign his impossible task; he and the feckless Congress faced the fact that there was no one else to take up such a burden.

Finally the French joined in the fight against their old enemy, and the British gave up and went home. By then it was 1783. He had a few happy years getting Mount Vernon's fields and livestock back into proper shape. But in the long hot summer of 1787 the country called on him again, this time to serve at the Constitutional Convention in Philadelphia. The other delegates knew he would be the new republic's first elected President. Many delegates, particularly those from the South, hated the idea of the kind of federal government Washington stood for. But knowing his character by then, they understood that he would not abuse whatever powers they gave him and were a bit more inclined to grant them.

He was unanimously elected President in 1789 and headed for New York City, chosen as the first seat of the new government. His job? To set

RICHARD ROBINSON

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sound political precedents and show how the first President of the world's most promising but precarious political experiment ought to behave.

Driven by duty to present himself to the citizens of the shaky new union, he spent the night in so many inns and private houses that "George Washington Slept Here" became a real estate cliché, as well as the title of a clunky 1940 stage (and screen) comedy by Kaufman and Hart. Our object at hand was not one of the many beds that Washington slept in while upon his travels. It is rather his first "best bed," as a particularly fine bed was then described, inherited, like Mount Vernon itself, from his half-brother Lawrence.

Antiques experts refer to it as a "married piece," meaning that at some point in the past its original mahogany quatrefoil bedposts were wedded to replacement parts to complete the bedstead. Swathed in elaborate 18th-century-style canopies and comforters, the bed is now to be seen on Mount Vernon's main floor. Along with many other authentic items, ten of them on loan from the Smithsonian's National Museum of American History, it was sent to Mount Vernon to be part of a nationwide effort to reacquaint Americans with Washington on the 200th anniversary of his death.

In the nick of time, it would appear. A year or so ago, a town in Louisiana took Washington's name off an elementary school, giving as a reason that he owned slaves. Today, historians at Mount Vernon note, young people are no longer sure why the man's face is on the quarter and the dollar bill.

Throughout the year, pictures, documents and objects associated with Washington have been on display, many centering around Mount Vernon, lately refurbished to look more like the working farm and private home it was rather than the quasi museum it later became. But for people who can't make it to the banks of the Potomac, a splendid traveling exhibition entitled "Treasures from Mount Vernon: George Washington Revealed" is touring the country. A new Internet site (www.gwashington1999.org) is open, and scholars have compiled an official list of the ten best books about him.

The effort is laudable and will doubtless do his image some good. Gilbert Stuart, who took a dislike to Washington, gave us the grim portrait that still chills us from the dollar bill. The 19th century made him into a monument endowed with almost superhuman virtues and encrusted in formality. "Did anyone ever see Washington naked!" Nathaniel Hawthorne once said. "I imagine [he] was born with his clothes on and his hair powdered." In our own debunking age, a considerable part of the effort to humanize Washington emphasizes the flesh and blood farmer, acquirer of real estate and owner of slaves. We learn that he loved children but never had any of his own. That he practiced soil chemistry and crop rotation, giving up tobacco in favor of wheat. He also bred mules, was one of the finest horsemen of the age, liked to dance and play cards and—though he ate and drank sparingly—distilled and sold whiskey out of Mount Vernon. Much has been, and will be, made about the fact that he fell half in love with his next-door neighbor's young wife, Sally Fairfax, then married a rich widow, a fact less important than that he was apparently faithful to Martha for 40 years. And, of course, there are those sets of false teeth, not wooden but made from hippo tusks and other materials, that pained him continually and deformed his face.

An 1853 lithograph, *George Washington, The Farmer*, portrays a highly sentimentalized view of slaves working neat fields at Mount Vernon.

GRANGER COLLECTION

Bringing Washington to life these days is a hard row to hoe, because he really was a monument as well as a man, and to understand him, you need to understand the monument, too. The stoic Roman virtues that he practiced are almost entirely alien to our febrile times. He was a leader and a patriot, not a politician; the authority figure of all authority figures. Like the Romans he saw ambition not as a

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matter of individual ego but as a public duty. Infinitely scrupulous, infinitely patient, endlessly devoted to the vision of political union, a democratic republic strong enough and just enough and sensible enough to prosper, he became quite literally the father of a new country. But "father knows best" does not play well today when bumpers are plastered with "Question authority" stickers, while assorted cultural influences simply presuppose that fathers are hopeless boobs, that patriotic exhortation is mostly phony, and that the restraint, discipline and order that Washington brought to everyday life are hypocritical.

It is hard to understand what the country owed him, if you believe, as people today tend to, that everything had to happen the way it did happen. We can hardly imagine the new republic, its birth perilous, its destiny decidedly not manifest, a tiny, shaky experiment, torn with dissension, deeply in debt, a prey to internal anarchy and the external ambitions of Europe. All similar experiments had ended in mob rule or oligarchy or dictatorship.

Washington was a practical man, a tinkerer and problem solver, and an original self-help American. He spent his life studying and figuring out what was the right thing to do, then gave it his best shot. He had the latest books on how to be an expert farmer. On how to become your own architect. Books on government and philosophy. The works of Seneca. As general, he figured out how to fight the British starting with no army at all. As President, Washington managed to get the best out of men as opposed as Alexander Hamilton and Thomas Jefferson. Above all, he managed to figure out how to bring the union safely into being.

As President, he also stayed as much as possible apart from partisan politics, something we can hardly imagine now. Early in the job, when everything he did set a precedent, he visited the Senate, listened to a good deal of wordy bickering, then left, reportedly saying, "I'm damned if I go there again." And he never did.

Nothing symbolizes the modern age's difficulty in understanding Washington's life and times more than the easy moral outrage that encourages the present to simplify the past in order to condemn it. Especially the matter of slavery. Washington was deeply troubled by slavery. After the Revolution, he did not, with one exception, sell Mount Vernon's slaves away from their families, and he studied ways in which they might be equipped for freedom, including an arrangement by which they could work for one of his tenants and get paid for it. In his will he stipulated that his slaves should be freed upon his wife's death, and specifically left money that was still supporting them at least 30 years after his death.

In the end, what did away with slavery was the decline of state sovereignty and the growing power of the union that the Constitution made possible. That and the rise of commerce, set in motion by Washington and Hamilton and opposed by states' rights advocates like Jefferson and others, who championed agriculture, even though in the South it was largely based on slavery. Washington understood that the end of slavery would be possible only when the federal government was strong and more people made their living in trade, in manufacturing and other nonagrarian pursuits. Jefferson bitterly disagreed.

General Washington used this unbleached linen tent not for sleeping but for staff meetings and banquets during the Revolution.

It would take a long and bloody civil war to prove that Washington had been right. Yet Jefferson's final assessment of the first President is worth remembering: "His integrity was most pure, his justice the most inflexible I have ever known, no motives of interest or consanguinity, of friendship or hatred, being able to bias his decision. He was indeed, in every sense of the word, a wise, a good and a great man."

George Washington died at age 67 in the big family bed on the second floor at Mount Vernon, on December 14, 1799. He was exhausted; a sudden inflammation of the throat stopped his breathing. At Mount Vernon, you can see the room as it was, complete with blood-letting implements and bloody rags. "'Tis well," he whispered as he died, perhaps thinking of a lifetime of effort, perhaps merely that the hours of pain were over. Martha died just two years later. She had never slept in that bed again.

CHARLES PHILLIPS

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Animal Old Folks

FOR THE NATIONAL ZOO'S ESTEEMED SENIOR CITIZENS, ONLY THE VERY BEST IN GERIATRIC MEDICAL CARE WILL DO

BY MICHAEL KERNAN

HSING-HSING, THE GIANT panda at the National Zoological Park, moves slowly these days, and sometimes slumps on the floor with all four legs splayed. He's going on 29, which is extremely old for a panda, and he has kidney trouble and bad arthritis in the spine and elbow.

He gets a diet of bamboo, and a gruel of cottage cheese, honey, rice and vitamin supplements. But when he hurts, or when he just feels stiff and lame, he doesn't eat, so the Zoo vets give him anti-inflammatory carprofen several times a day.

Now, it is not easy to give a pill to a panda. You don't just go into the cage and pry open his jaws and push it down. He's wild, and however cuddly he looks, he's not to be mistaken for your golden retriever.

"He used to take it in a sweet potato," says Robert Hoage, the Zoo's public affairs chief, "but then he decided that he was tired of sweet potatoes. But one day some keepers were having lunch near his cage and somebody had a blueberry muffin. He sniffed it out and they gave him a nibble. He loved it. So we put the pill in a blueberry muffin." The keepers soon discovered, however, that it couldn't be just any blueberry muffin. Hsing-Hsing will only eat Starbucks' blueberry muffins.

"Starbucks is generously donating the muffins," Hoage adds. Nothing is too good for Hsing-Hsing. He is so famous that he gets mail and even phone calls from people all over the world who are concerned about his health. In the corridor by his enclosure are posters and pictures from children. One reads: "Dear Hsing-Hsing, we read in the newspaper that you are sick. We hope you are feeling better. . . . King School."

In old age, Hsing-Hsing has become one finicky—and sage—panda. He'll only take a pill if it's inside a blueberry muffin.

JESSIE COHEN/NATIONAL ZOOLOGICAL PARK, SI

In the wild, pandas rarely live 20 years, so it is not exactly a surprise if this furry celebrity doesn't always eat his meals on schedule. Here it was 2 P.M. and he was just getting to his 11 A.M. gruel. All this information goes into the Zoo's files.

"We've done 27 years of research on giant pandas," Hoage tells me. "As one of the world's preeminent research zoos, we are a leader in these studies. They provide a baseline for future research. It's exciting to know that we're helping to write the first chapter on zoo animal geriatric medicine."

"Geriatric" is the key word here. Since zoos tend to preserve animal life far beyond what would be expected in the wild, they see a lot of elderly animals. Here's Nancy, a 45-year-old elephant, peering expectantly into the doorway of her giant stall. She holds up her left front foot because she has a dangerous bone infection, osteomyelitis, in one of her toes, that could work its way up her leg. Three times a week she gets antibiotics intravenously, directed at the infected tissue with the aid of a specially designed elephant tourniquet, one of only two in the country. It's not exactly a hot mar-

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Veterinarian Lucy Spelman gives Nancy, an older elephant, a shot for an infection in one of her toes; the red tourniquet will keep the medicine concentrated in her foot.

ket item. But twice a day Marie Galloway, the head elephant caretaker, flushes out the wound and swabs it. Hoage and I get to watch inside the stall.

First, Galloway takes a blood sample from the huge gray ear. Then she rolls in a large iron stool like the ones you see in the circus, and Nancy immediately puts her sore foot up on it. "She's anxious to get started," Galloway says. "We think it relieves the pain some."

Nancy stands there patiently. "She's a good girl," says Galloway. The elephant has been trained for such treatments. For one thing, elephants love order, and though she is the matriarch among the Zoo's elephants, Nancy recognizes a superior hierarchy of keepers and vets, and accepts their dominance. For another, she gets a steady rain of peanut-size biscuits, which she snuffles up skillfully.

Despite painkillers, Nancy winces slightly as the swab probes into what amounts to her fingertip. Hoage and I don't see her wince, but Galloway and her assistant are very aware of it. It is this sort of sensitivity to animals—an alertness to their feelings, which provide clues to their health—that marks a good caretaker. Attention like this is expensive, of course, in money and hours. The cost is covered by federal money and various conservation funds.

Suddenly we hear a rattling roar, rather like a bookshelf falling down a staircase. The caretakers ignore it. "A little gas," explains Hoage.

We then watch Mesou, a 44-year-old gorilla, taking the afternoon sun. With the air of preoccupation typical of apes, she is eating lettuce leaves she has found here and there on the grass. She moves slowly, stiffly, for she also has severe spinal arthritis and her fur is gray, not like the male silverback's fur, but gray all over. "See, she doesn't have the vibrant, energetic, confident movement that you see in younger animals," notes Hoage. Mesou is on food supplements and antibiotics for her chronic gingivitis, for which she goes to a dentist at least once a year. "If you're successful in keeping them alive, you're going to have geriatric problems," Hoage explains.

Some zoos keep ailing animals out of sight; others simply put up signs explaining the problem. A sign in the gorilla house: "Mandara has a bite wound on her left hip."

Sometimes, animals are kept out of sight for their own comfort. We visit Maureen and Esther (as in Esther Williams) in a special pool behind the big waterway. Both are 22, which is ancient for sea lions. In the wild they would rarely make it past 15. Esther is on steroids for muscle inflammation, and Maureen has a chronic infection resulting from a bite, requiring draining and antibiotics—expensive antibiotics that initially ran her treatment costs up to $1,000 a month. She's getting better, at last. Maureen was taken in as an orphan. She was found caught in a net with a broken jaw and had to have all her teeth removed. That's not a problem, however, for here at the Zoo sea lions swallow their fish whole. In the sea they would need teeth to catch the fish, but here they are hand-fed.

Like many animals and people, sea lions eat less as they grow old, become thinner and lose energy. Vitamin pills are slipped into their fish diet. Plus, they are trained constantly to cope with what might happen when they do get sick. Every time a sea lion slithers up on the rocks for a snack, the keeper presses a needleless syringe against its side to get it used to the feeling. Then if it does need an injection, it won't be too surprised.

Now Maureen swims on her back in the shade, her eyes closed. She has just finished molting, a time when sea lions tend to have eye problems. As usual, the keepers notice everything, which is quite a feat since animals, of course, can't tell them what's wrong and instinctively hide any weakness lest some predator spot it and attack them. This sense of self-preservation is so profound that a mother rhino will cover the manure of a vulnerable baby rhino with her own spoor.

The list goes on. Sobat, a Komodo dragon, a creaking 14 years old, is on a diet to ease the arthritis in her knees. Taj the white tiger, 15, has progressive weakness in his hind legs, a gradual degeneration that is slowed somewhat with drugs and vitamins. He has also had several root canals. There's a hippo that's 47 years old, a crocodile that's 41, a 35-year-old flamingo and a tortoise born in 1965. Well, let's face it. None of us is getting any younger.

JESSIE COHEN/NATIONAL ZOOLOGICAL PARK, SI

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An Era Ends at High Noon

SMITHSONIAN HIGHLIGHTS

"MAKE THE DIRT FLY!" EXHORTED PRESIDENT Theodore Roosevelt in 1904 as construction began on the Panama Canal. Two years later, Roosevelt wanted to go see for himself the massive engineering project he had authorized. It would be the first time an American President had ever left the country while in office. Tramping through the muds of the rainy season, Roosevelt visited the workers at the Pedro Miguel Locks. Hopping up in the seat of a 95-ton Bucyrus steam shovel, the exuberant President looked diminutive at its controls (above). When the 51-mile canal across the Panamanian isthmus was completed in 1914, six months ahead of schedule and $23 million under budget, the world's ships could travel from the Atlantic to the Pacific in just a day—a trip that once was more than 5,000 miles by way of Cape Horn. Now, 85 years later, at high noon on December 31, the Republic of Panama will assume from the United States all responsibility for the canal. Two exhibitions at the National Museum of American History honor the transfer. "'Make the Dirt Fly!' Building the Panama Canal," organized by the Smithsonian Institution Libraries and funded in part by Bucyrus International, Inc., is complemented by "Panama's Canal: Dawn of a New Era," a case exhibit that reviews the recent history of the canal and discusses the new challenges awaiting Panama. *—Beth Py-Lieberman*

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SMITHSONIAN

HIGHLIGHTS

African Voices

NATIONAL MUSEUM OF NATURAL HISTORY

The continent of Africa comprises more than 50 sovereign nations, with thousands of diverse cultures and hundreds of languages. It is where evidence of the emergence of the first humans was found. And because Africa's recent history includes the forced and voluntary migration of its peoples worldwide, African communities are flourishing on every inhabited continent on earth. To celebrate this land and its cultures, a new permanent exhibition, "African Voices," opens December 15 at the National Museum of Natural History.

"'African Voices' uses a new model for the development of cultural halls, one based upon close collaboration with the communities represented," says Robert Fri, the director of NMNH. Its six themed galleries, in 6,500 square feet of exhibition space, feature artifacts, images, recorded voices and interactives that convey what it's like to live and work in Africa, as well as the continent's wealth and its global influences. In the gallery "Kongo Crossroads," objects of reverence and remembrance, like this pair of carved wooden male and female grave markers from Boma, Kongo (below), vividly evoke the enduring presence of ancestors in daily life.

Kongo grave markers are on view in the new "African Voices" exhibition at NMNH.

Holiday Celebrations

MUSIC AND MORE

Wong Chinese Lion Dancers, Kwanzaa activities, traditional Celtic and Japanese music, and mime performances are features of the annual three-day holiday celebration (December 26-28, 12-4 P.M.) at the National Museum of American History. Holiday shoppers are invited to the Museum Shop at the National Museum of Natural History on Friday nights (December 3, 10 and 17, 6-9 P.M.). The exhibitions will be closed, but the Atrium Café will remain open and the Johnson IMAX Theater will offer screenings of *Mysteries of Egypt*.

Smithsonian Website

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Visit our homepage and click on "Events." The on-line calendar is designed so that visitors can view on-line versions of these exhibitions, as well as the Websites of all the Smithsonian museums.

Exhibitions and Events

NATIONAL MUSEUM OF AFRICAN ART

Wrapped in Pride: Ghanaian Kente and African American Identity (through January 2) Cohosted by the Anacostia Museum and Center for African American History and Culture, the exhibition examines the history, weaving technology and uses of kente cloth. The exhibition continues in the Arts and Industries Building.

Hats Off! A Salute to African Headwear (through December 26) A tribute to African headwear and the prestige of the wearers.

ARTS AND INDUSTRIES BUILDING

Revue Noire: Africa by Africans (through January 2) A celebration of a century of African photography.

NATIONAL MUSEUM OF AMERICAN ART

Edward Hopper: The Watercolors (through January 3) These summer scenes made between 1923 and the mid-1940s brought Hopper his first critical and financial success.

RENWICK GALLERY (NMAA)

Glass! Glorious Glass! (through January 30) The museum's studio glass collection reveals the range of techniques—casting, slump molding, blowing and lampworking—in this medium.

NATIONAL MUSEUM OF AMERICAN HISTORY

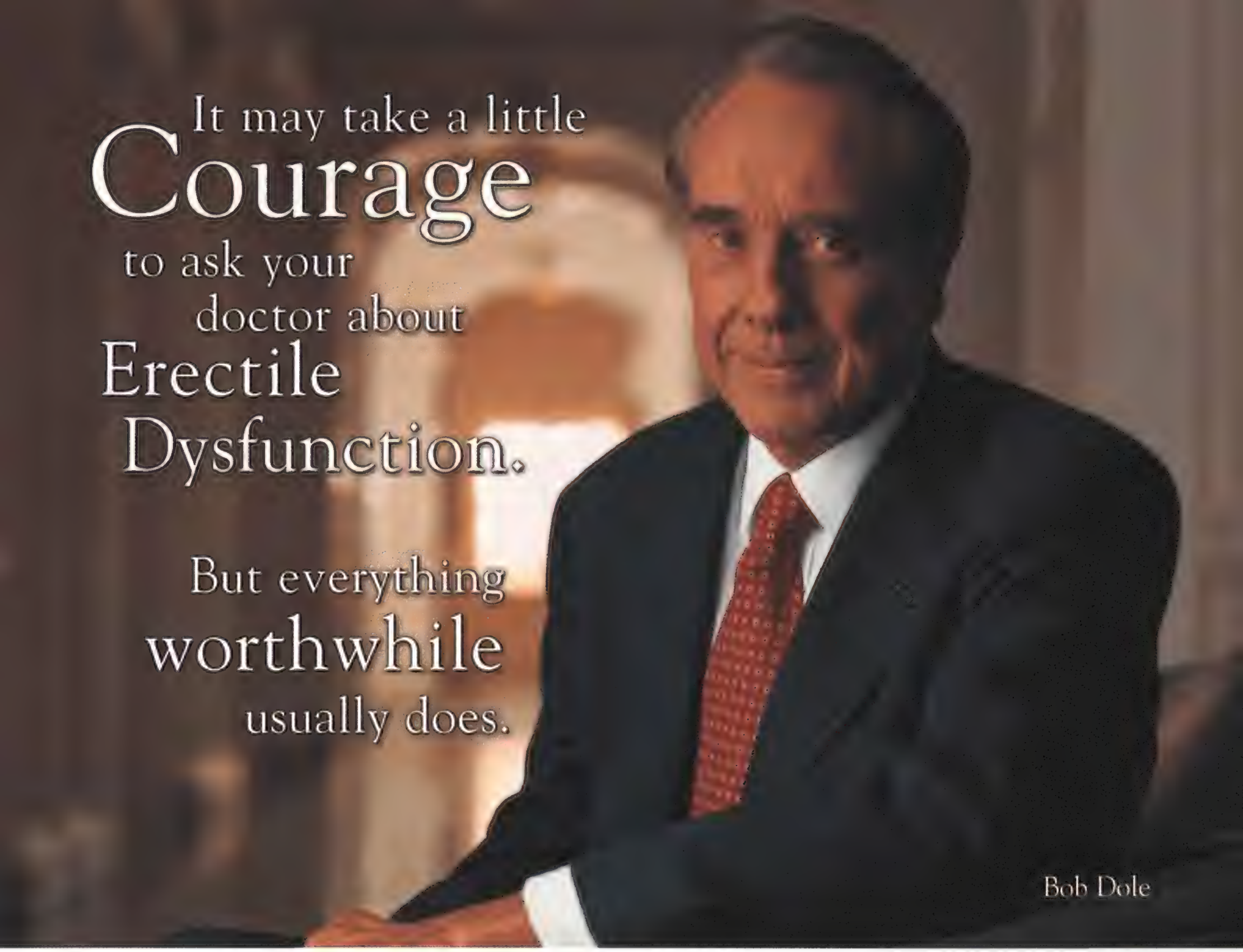
On Time A permanent exhibition exploring the changing ways that Americans have measured, used and thought about time during the past 300 years (see page 52).

Preserving the Star-Spangled Banner: The Flag that Inspired the National Anthem Visitors are invited to observe the conservation process.

NATIONAL MUSEUM OF NATURAL HISTORY

In Place of Prairie (through March 7) Award-winning photographer Terry Evans explores the beauty and diversity of prairies and the people who settled them.

Ainu: Spirit of a Northern People (through January 2) A look at the culture of the



When I was diagnosed with prostate cancer, my first concern was ridding myself of the cancer. But I was also concerned about possible postoperative side effects, like erectile dysfunction (E.D.), often called impotence. So I asked my doctor about treatment options.

I'm speaking out now in the hope that men with E.D. will get proper treatment for a condition that affects millions of men and their partners.

Most E.D. cases are associated with physical conditions or events, like the prostate cancer surgery I underwent. The most common causes of E.D. include diabetes, high blood pressure, spinal cord injury, or surgery for the prostate or colon. E.D. can also be associated with smoking, alcohol abuse, or psychological conditions such as anxiety or stress.

The good news is that many effective treatments are available for E.D. But the important first step is to talk to your doctor. Together, you and your doctor can decide which treatment is best for you.

Now it's up to you to get the treatment you need for E.D. My advice is to get a medical checkup. It's the best way to get educated about E.D. and what can be done to treat it. It may take a little courage, but I've found that everything worthwhile usually does.

For more information about erectile dysfunction, please call 1-800-433-4215.

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A 1947 portrait of Truman Capote by Cartier-Bresson is on view at NPG.

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Regarding Beauty: A View of the Late Twentieth Century (through January 17) Explores the age-old concept of beauty and its contemporary interpretation.
Directions—Shahzia Sikander (through February 21) Some 30 works on paper and a mural by the New York-based Pakistani artist.

NATIONAL POSTAL MUSEUM

Missing You: Last Letters from World War II (through April 30) Tells the story of six servicemen and their last letters sent home before the writers were killed in action.
Posted Aboard R.M.S. Titanic (through June 12) Artifacts recovered at sea memorialize five sea post clerks who died when the great ship sank.

ARTHUR M. SACKLER GALLERY

Antoin Sevruguin and the Persian Image (through May 28) Sevruguin's sensitive and evocative photographs record the social history and culture of Iran.
Treasures from the Royal Tombs of Ur (through January 17) Presents a remarkable cache of 5,000-year-old artifacts from the Sumerian city-state.
Constructing Identities: Recent Works by Jananne al-Ani (through February 28) Two pairs of large-format photographs and a related slide projection by the contemporary artist challenge the "Oriental" female stereotype.
Imaging the Word: Selections of Calligraphy from the Islamic World (through May 7) The museum's collection from the 9th to the 20th century.

FREER GALLERY OF ART

A Breath of Spring (through January 9) On view is a 14th-century Chinese handscroll painting, recognized as one of the earliest and greatest examples of pure-ink painting.

ANACOSTIA MUSEUM

All galleries will be closed for renovation from December 1 through spring of 2001.

NATIONAL PORTRAIT GALLERY

Tête à Tête: Portraits by Henri Cartier-Bresson (through January 9) Includes portraits of Truman Capote (left), William Faulkner and Alfred Stieglitz.
Picturing Hemingway: A Writer in His Time (through January 2)
A Durable Memento: Portraits of Augustus Washington, African American Daguerreotypist (through January 2)

COOPER HEWITT, NATIONAL DESIGN MUSEUM
[NEW YORK CITY]

The Work of Charles and Ray Eames: A Legacy of Invention (through January 9) Retrospective of the work of the husband-and-wife design team.

GEORGE GUSTAV HEYE CENTER
[NEW YORK CITY]

Instrument of Change: Jim Schoppert Retrospective, 1947-1992 (through February 6) Works from the Tlingit artist.

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AT WORK

Michael W
Buford
30519

only belongings we had left of seven years together were the clothes we were wearing. Emotionally, this was the most trying experience of my life. I was not prepared to start over, or to explain to my children why they suddenly had no toys or couldn't wear their favorite clothes. But you were there to assure me that even though we had lost everything, we were not going to be homeless or without our quality of life. The support we received during this crisis went beyond any paid premiums and simple customer relations. Toby, thank you for holding our hands through this process, and ensuring us that ever going to be fine.

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millennium
2000

Taking THE *Measure* OF *TIME*

THROUGHOUT THE AGES, HUMANKIND'S ATTEMPT TO DEMARCATE OUR DAYS HAS RESULTED IN A SUCCESSION OF BREAKTHROUGHS, FROM SUNDIALS TO WRISTWATCHES AND ATOMIC CLOCKS

BY PER OLA AND EMILY D'AULAIRE

THE MAY MORNING WAS WINDY AND RAW, YET THE CROWD OUTside the Royal Observatory in Greenwich, England, southeast of London, seemed oblivious to the weather. As the gates opened, people surged through and headed for the museum's premier attraction: the prime meridian, an imaginary line that circles the globe north-south, marking zero degrees longitude—(000°00′00″). It is the place where East meets West; the place where time begins.

Once inside the courtyard, excited schoolchildren hopped back and forth across a plate-glass strip set into the cobblestones: the line marking the meridian. The youngsters giggled and called to their teachers: "Over here, Miss Kemp. Look. I'm in the Eastern Hemisphere. Wait, look again. I'm in the West."

Mounted on the brick building behind them, near a banner heralding "2/0°0′0″, The Millennium Starts Here," the observatory's digital clock counted down to midnight, December 31, 1999. Watching the milliseconds flash by with lightning speed, we felt an overwhelming sensation of time slipping away as we were propelled inexorably toward the year 2000.

The masterwork of Joseph Ellicott, an 18th-century mechanician, this case clock (left) is a new gift to the National Museum of American History. In addition to the front face, embellished with a lunar and tidal dial, the clock features (above) a left face, showing movements of the Solar System; a glass back, revealing inner works; and a right face, containing machinery for moving decorative figures and playing tunes on the hour.

At Greenwich, England's Royal Observatory, the prime meridian, marking zero degrees longitude, is indicated by a plate-glass line. Visitors, including these adventurers observing the start of a journey to Australia by cycle and kayak, converge here at the place where East meets West and time begins.

Even those of us who can't journey to Greenwich for the millennial festivities can become time travelers here at home. A new permanent exhibition at the Smithsonian's National Museum of American History, "On Time," explores the changing ways Americans have measured, used and thought about the passage of days, hours and minutes during the past 300 years (see p. 60).

The epicenter of world time, though, remains on that legendary meridian in Greenwich. "It isn't only children who find this place fascinating," observed Jonathan Betts, curator of horology at the Royal Observatory, as we watched a group of Japanese businessmen line up to be photographed astride zero degrees longitude. Just then a schoolgirl held out a camera to Betts. "Could you take a photo of me and my chum?" she asked shyly, oblivious of Betts' august role as a presiding authority in the realm of Greenwich Mean Time (GMT).

Betts grinned and obligingly snapped a picture of the two girls, who then scurried off to a nearby vending machine which, in exchange for a British pound (about $1.60), delivered an official certificate noting the precise moment, to one-hundredth of a second, that they had visited the historic spot. "Being nice to visitors is part of my job," chortled Betts, an amiable 44-year-old who lives and breathes clocks and is one of the best-known and most respected horologists in the world today.

Betts pointed out that the beginning of the year 2000 is not the *real* millennium, but merely the beginning of the countdown to it. "Say I owe you twenty dollars and pay you back a dollar at a time," he explained. "You don't consider the debt settled until I've given you the last penny of the twentieth dollar. By the same token, we won't have completed the millennium until we've *finished* the 2,000th year—and that doesn't happen until December 31, 2000." But the Royal Observatory has no intention of raining on the millennium parade. "When the zeros come," said Betts, "we're going to be celebrating ahead of schedule along with everyone else. It would be rather churlish not to, wouldn't it?"

Inside the observatory, designed by Sir Christopher Wren in 1675, Betts presides over a collection of some 1,500 timepieces, the crown jewel of which is H4, considered by many the most famous clock in the world, and which Betts has dubbed the "Mona Lisa of Horology." The *H* stands for John Harrison who, in 1759, constructed the clock, the first timepiece able to keep sufficiently precise time at sea. The invention allowed British sailors to mea-

ROBERT WALLIS (2)

No one knows exactly who invented the first mechanical clock, or just where or when.

sure longitude accurately when out of sight of land, a feat that changed the course of history and forever influenced world trade, exploration and war.

Long before Harrison devised his historic clock, people had grappled with ways to measure time. Cavemen began with big chunks of it, based on the movements of the sun and moon and the changing seasons. A 30,000-year-old bone, discovered in the Dordogne region of southwestern France, may be one of the earliest attempts at lunar timekeeping. Carved grooves in the bone appear to represent the moon's travels over a period of several months.

Many thousands of years passed before people measured time more precisely, not only in months, weeks and days, but in smaller slices, chopping days into hours, then minutes, seconds and, ultimately—or at least so far—picoseconds (trillionths of a second). To grasp how small a measure of time that is, light, which zips along at 186,347 miles per second—fast enough to reach the moon from earth in just 1.2 seconds—travels only one-hundredth of an inch in a picosecond.

Among the first time-measuring devices were sundials. Early on, observers noticed that the shadow cast by a post changed in length and direction as the sun traveled across what they then believed was the vault of the sky. By 3500 B.C., the Egyptians had constructed elaborate obelisks whose moving shadows broke the day into two parts, divided by noon. Two thousand years later, the obelisk had evolved into the smaller sundial, or shadow clock; for millennia it remained the most advanced device for dividing days into hours. The sundial, however, had obvious shortcomings: it didn't work at night or on cloudy days, and since the length of the day varied everywhere, sundial time varied everywhere, too.

One way of getting around the pesky unreliability of the sun was the water clock—water flowed both day and night (freezing weather was of course a time stopper) and could be contained in a small vessel. A half-century after the first sundials, Egyptians kept time by measuring water as it dripped from a hole in the bottom of a bowl. A series of lines, etched around the inside of the bowl, indicated the passage of time. The water clock required sophisticated calibration, since the water emptied out faster when the bowl was full and the pressure greater.

For thousands of years, water served as a backup for the fickle sun. David Thompson, the curator of horology at London's British Museum, who oversees a collection of more than 7,000 timepieces, describes one of the more elaborate creations. Built for a Chinese emperor in A.D. 1090 by a civil servant named Su Sung, this "Heavenly Clockwork" consisted of a 30-foot-high pagoda-like tower. Inside, a waterfall powered the works. Outside, a celestial globe rotated at the peak of the structure. Beneath it, doors opened to reveal five stories of figures who clanged bells and gongs at appropriate moments to sound out the time.

He goes on to explain that, with the refinement of glassmaking in eighth-century Europe, the hourglass, or sandglass, became the standard measure of time. Though impervious to both clouds and cold, the weight of sand was a drawback. Therefore, sandglasses were small and used mainly for short-interval timing: sermons, lectures and, eventually, determining the speed of a ship.

To accomplish that, a seaman tossed overboard a rope with knots tied at measured intervals. He then called out as each knot slipped through his fingers while another crewman monitored a sandglass that measured 28 seconds. If five knots passed through the seaman's hand in that interval, the ship was moving at five "knots"—a nautical and aeronautical measure of speed used to this day. (One knot equals 1.15 miles per hour.)

Jonathan Betts, Greenwich Observatory's curator of horology, displays H4, the first clock to keep precise time at sea.

No one knows exactly who invented the first mechanical clock, or just where or when, though most experts agree that by 1300, mechanical clocks were ringing out from towers and cathedrals across Europe. Those early clocks—the word derives from the German *Glocke*, or "bell"—had no faces, or hour or minute hands. They sounded the time, striking a bell every hour. Observes Sir George White, who presides over the world's oldest clock collection, at the Worshipful Company of Clockmakers, a London guild dating back to 1631, "The sound of a bell floating across a meadow is far more beautiful than any clock dial could ever be."

The mechanical clock's reliability was due to one of the most ingenious inventions in clockdom: the "escape-

PP. 52, 53 RICHARD STRAUSS, SI (4)

ment." Still in use, the escapement is a pivoting lever that engages a toothed wheel at consistent intervals. This regulates the "escape" of whatever is powering the clock—descending weights or a spring, for example—in order to control the speed at which gears and wheels turn, evenly metering out the power to measure the time. It is the rocking motion of the escapement mechanism that puts the *tick tock* into a clock.

As time ticked on, clocks sprouted fancy face pieces and dials. At first, only an hour hand was deemed necessary. But as society became more sophisticated, so did clocks, which gained minute and second hands.

An equinoctial ring dial, made in London, c. 1735, was used to measure solar time.

In the mid-1400s, European craftsmen discovered that coiled springs, unwinding at a speed governed by an escapement, could move the hands on a timepiece as efficiently as the weights of a tower clock. This discovery made possible the first portable clocks, later reduced in size to become watches.

But it was with the development of the pendulum that clocks gained a once undreamed of accuracy. In 1656, Dutch astronomer and mathematician Christiaan Huygens created the first pendulum clock—based on a principle Galileo had discovered: a pendulum swings at a constant rate. Huygen's clock was off by less than a minute a day, a dramatic improvement over the 15 minutes or so lost daily by earlier timepieces.

The longer the pendulum, the greater the accuracy, and long pendulums became de rigueur. The longcase clocks, commonly called grandfather clocks, often included a glass door through which the clock owner's guests could admire the pendulum. "These were the high-tech clocks of the day, and definitely status symbols," notes Jonathan Betts.

As Betts walks us through clock-filled rooms at the observatory in Greenwich, he relays his favorite clock story. Not surprisingly, Betts' tale is the story of time itself: the quest for longitude.

From the days of Ptolemy in A.D. 150, mapmakers used intersecting grid lines to indicate points on the earth's surface: latitude, the parallel lines that circle the earth horizontally, and longitude, the vertical lines that curve north-south and converge at the poles.

Finding latitude was relatively easy. The Greeks had determined north-south position from the angle of the sun and the stars as early as 300 B.C. Because the earth's rotation causes the heavenly bodies to appear in constant motion, however, to measure longitude, navigators needed to measure time precisely. Reason: the earth makes a full rotation of 360 degrees every 24 hours. That works out to 15 degrees per hour. Thus, if a sailor knows the time at a specific location on land, and the time aboard ship, he can calculate the number of degrees between that point and his ship. When the point on land is fixed at zero degrees longitude–as the prime meridian at Greenwich is today–by comparing the two times, he can determine the number of degrees between the two locations, then easily calculate his distance east or west of the meridian to pinpoint his position.

Even the best 18th-century clocks with their long pendulums were worthless at sea. "The motion of the ship altered the swing of the pendulum and thus the speed of the clock," explains Betts. "Changes in temperature and humidity played havoc with the lubricating oil, usually animal fat, and also contracted and expanded the metal in the pendulums." With every minute lost or gained by a clock translating to a navigational error of up to 15 nautical miles, the need for a precision seagoing clock was obvious—but the device was a long time in coming.

With no way to determine their exact position at sea, sailors lost their lives by the thousands as their ships got hopelessly lost or smashed against shores and shoals. Finally, in 1714, the British Parliament offered a prize of £20,000, equal to several million dollars today, to whoever could solve the problem of finding longitude at sea.

A deluge of proposals flooded the Board of Longitude, many of them preposterous. One of the more outlandish "solutions" involved a compound called the powder of sympathy, believed to affect a soldier's wounds when it was poured onto the weapon that had injured him. The plan suggested that every ship have on board a dog that had been cut by a knife kept in London. At noon each day, the keepers of the knife would sprinkle it with the powder, which would cause all dogs at sea to howl in distress, alerting the captain that it was midday back home.

The ultimate champion of longitude was an unlikely candidate. John Harrison was a carpenter's son with no formal education, a self-taught craftsman who began building clocks as a youngster. He worked for six years on his first attempt to win the prize. Now called H1, the three-foot-high clock, with opposing interconnected vertical bal-

STEPHEN PITKIN/TIME MUSEUM, ROCKFORD, ILLINOIS

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Since ancient times and across cultures, devices for marking mankind's hours have proliferated. Timekeeping devices, clockwise from top left, include an American sundial and the mold it was cast from, 1779; a terra-cotta water clock from classical Athens; a sandglass, used in a schoolroom in 19th-century Sterling, Massachusetts; a German chamber clock, c. 1500; and a French 19th-century portable sundial.

ance springs in the place of a pendulum, took a test run on a round-trip journey to Lisbon. Harrison was so sick during most of the five-week voyage that he never went to sea again. H_1, however, fared better—accurate probably to within ten seconds a day. That was not enough to win Harrison the longitude prize, which required a daily accuracy of 2.8 seconds or less. But it did earn him a small stipend from the Board of Longitude and provided the encouragement he needed to try again.

Harrison had been working on his second clock for more than two years when he discovered a fatal flaw: an unexpected violent jolt, such as might occur on a ship, threw it slightly out of whack. Without a backward glance, he put aside H_2 and began building a third clock.

While working on H_3, Harrison wondered if he could miniaturize the temperature-compensating features of his seagoing clocks into a pocket watch for his personal use. He designed the watch on paper, carefully specifying materials and dimensions, then commissioned John Jefferys, a London watchmaker, to build it for him.

The performance of the new watch astounded even Harrison, outperforming anything he had envisioned so far.

STEPHEN PITKIN/TIME MUSEUM; G. DAGLI ORTI (2); STEPHEN PITKIN/TIME MUSEUM; TERRY MCCREA, SI

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THE BLENDING *of* ART *and* MACHINE

A trove of timekeeping treasures

"He suddenly realized he'd been following the wrong path all those years," states Betts. "He now knew he should have been concentrating on a watch-type timepiece, not a large clock." Throwing away 19 years of labor on H3, Harrison once more started over. The result was H4. Five inches in diameter and three pounds in weight, it represented a revolutionary departure from his earlier attempts.

During a 6½-week voyage Harrison's son made from Britain to Jamaica in 1761-62, H4 lost only five seconds. It was an astonishing feat, but a reluctant Board of Longitude refused to award Harrison the prize. "They were entirely attuned to astronomical solutions," explains Betts. "They simply couldn't believe that a mechanical timekeeper that looked like a large pocket watch, albeit a beautiful one, could do what it had done, in spite of what they had witnessed."

"Maybe this is merely a fluke," argued members of the longitude board. Harrison and the board bickered incessantly over procedures for testing and producing the watch. At last, after a second test voyage, the board relinquished one-half of the prize money, or £10,000.

Exasperated, in 1772 Harrison's son pleaded for an audience with King George III. After the king heard his tale, he pounded his fist on the table and shouted, "By God, Harrison, I shall see you righted." It had taken 45 years of painstaking effort and persistence, but John Harrison, by then 80 years old, finally received another £10,000, plus expenses—and his place in horological history.

Other clockmakers followed his lead, making further refinements on H4, and by the 19th century, chronometers, as they came to be called, were standard equipment on all oceangoing vessels. Navigation was now accurate to within a few miles—all thanks to the self-taught son of a country carpenter, who solved a technological problem that had baffled sailors and scientists for centuries. Claims

Helen Keller's pocket watch featured a hand on the back surface; time was read by feeling how far the hand had moved between the rim knobs.

The National Museum of American History's new permanent exhibition, " On Time," showcases an array of timepieces, including, top: a stopwatch (c.1859) and a windup alarm clock (c.1930); center: a 19th-century Swiss watch resembling a mandolin, an American wooden-gear clock (c.1815) and a Connecticut box clock (c.1816); bottom: a local sun-time clock from Philadelphia (c.1874) and a clock with an acorn-shaped face (c. 1849).

Sir George White, "H4 was the technological triumph that paved the way for the British Empire."

Across the Atlantic, another horological hero was paving the way for change. In the early 1800s, Connecticut clockmaker Eli Terry developed machines, patterns and techniques able to produce parts so exactly alike they could be interchanged from one clock to another and still run perfectly—previously unheard of in the one-of-a-kind clockmaking world. Chris Bailey, curator of the American Clock & Watch Museum in Bristol, Connecticut, explains the importance of Terry's invention: "True interchangeability of parts made mass production possible. It is not Eli Whitney, whose earlier attempts at mass production failed, but Eli Terry who is the real father of the industrial revolution in America. He deserves a commemorative postage stamp."

Though Eli Terry doesn't have his own postage stamp—an unspeakable oversight in Bailey's view—his mass production put clocks into the hands of ordinary people. Yankee peddlers loaded Terry's mantel clocks, with their exquisite reverse-painted glass panels, onto horse-drawn carts and set off across the expanding American frontier.

Mass production made time available to all, just as Harrison had made longitude available to mariners. But there was still horological confusion on land. Throughout much of 19th-century Europe, and in the United States, steam power and electricity changed lives. Workers manned factories day and night. Railroads and telegraph offices needed to agree on the time. The trouble was that most towns kept their own time, setting their clocks and watches by the sun. That meant that when it was 3:58 P.M. in New York, it was 4:10 P.M. in Boston.

In Great Britain, in 1852, the Royal Observatory solved the problem locally by distributing a telegraph signal that transmitted what they called Greenwich Mean Time, putting everyone in the country on the same clock setting regardless of what the sun did overhead.

Things were trickier in the United States, where sun time varied three and a half hours from coast to coast. The problem was compounded by the fact that, by the early 1880s, U.S. railroads operated on 50 different time zones, which caused confusion and safety problems. "In this country, it was the railroad industry itself that acted to end that confusion," declares Carlene Stephens, the curator oversee-

RICHARD STRAUSS, SI (2); P. 60 DANE PENLAND, SI; HUGH TALMAN, SI (2); DANE PENLAND, SI; RICHARD STRAUSS, SI; TERRY MCCREA, SI; DANE PENLAND, SI

Exquisite exemplars of the clockmaker's art include, from left: a carillon clock, 1589; a banjo-shaped wall clock, 1816; and an Italian night clock, 1863, gilded so richly it was intended to glow in the dark.

BRITISH MUSEUM; STEPHEN PITKIN/TIME MUSEUM; BRITISH MUSEUM

ing the clocks in the collection of the National Museum of American History and in "On Time." "Spurred by several tragic train wrecks caused by the inconsistent times, and a fear that the federal government would impose regulations, in 1883 a group of railroad managers adopted four standard time zones across the United States. These zones are basically the ones we have today."

The issue of a worldwide time standard came to a head in October 1884, when delegates from 25 nations met in Washington, D.C. for the International Meridian Conference. The proceedings were tinged with rancor, notably by French delegates who claimed it was *incroyable* that the prime meridian not run through Paris. Ultimately, however, the group—with France abstaining—endorsed Greenwich as zero degrees longitude. It was a move that sparked the creation of the worldwide time zones we know today.

Throughout all the brouhaha, though Europeans remained the masters of sophisticated clockmaking, the Americans were making an increasingly strong showing with cheap clocks and watches, some selling for as little as a dollar. Indeed, by the turn of the 20th century, the inexpensive timepieces were selling rapidly throughout rural America, where they could be purchased from a catalogue sent out by the company that would one day become Sears, Roebuck & Co. Years later, two Norwegians bought an American clockmaking company; their new venture, devoted to watchmaking, eventually would be called Timex. Their business took the same direct-marketing approach, skipping the jeweler as middleman to peddle its inexpensive watches at drugstores, newsstands and hardware stores. The company's sales tactic was a low price—and indestructibility. Timex advertisers slammed the watches against brick walls, fastened them onto wild animals, attached them to ship's propellers.

The wristwatch craze began during World War I. At first the handy timekeepers had been considered ornaments for the fair sex only. No "real man" would be caught wearing one. But it wasn't easy for a soldier to extricate a pocket watch in the heat of battle, especially with a rifle in one hand and a grenade in the other. Ultimately, wristwatches became standard issue for the troops on both sides. By the time the Great War was over, the idea was catching on.

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The development of the cesium atomic clock led to an actual redefinition of the second in 1967.

While watch and clock manufacturers concentrated on their products' appearance and marketing, scientists sought new ways to measure time more precisely. The next breakthrough was a radical departure from the mechanical methods of the past. Watchmakers, applying advances in physics, used small amounts of electrical current to vibrate quartz crystals at a specific frequency, a phenomenon known as piezoelectricity. These vibrations could be electronically translated into time, with a small battery as the power source. The end result was the quartz-crystal watch, theoretically accurate up to one second in 500 years. Starting in the 1960s, Swiss, Japanese and American electronics manufacturers took mass production of quartz and digital watches to new heights. It seemed telling time couldn't get any better than this.

But time never stands still, and in the quest for greater precision, physicists made another quantum leap forward with the discovery that the oscillations of cesium-133 atoms, subjected to microwave radiation, could be manipulated to allow a time calculation with an error of one second every 1.4 million years. Whereas quartz vibrations could be affected by age and temperature, the oscillation frequency of a cesium atom remains unchanged—forever.

Acknowledged as the most precise time-measurement device yet, the cesium atomic clock led to the redefinition of the second in 1967. The inherent frequency of cesium atoms became the official international unit of time, now called Universal Coordinated Time. No longer was time measured on the movements of the earth, a second being a fraction of a day, but by the vibrations of an atom—a second being the time it took a cesium atom to oscillate precisely 9,192,631,770 times. Atomic time had replaced "earth time" as the world's official timekeeper.

Charging onward, the atomic clock and space age developments, coupled with the Cold War, resulted in a navigational aid that would have astounded John Harrison. The U.S. military needed to increase rocket and artillery accuracy, and to improve precise land, sea and air navigation regardless of weather. To meet that need, in the late 1970s, the U.S. Air Force started launching satellites for the Global Positioning System, or GPS.

Twenty-four satellites, some equipped with three atomic clocks, others with four, rocketed into orbit 12,000 miles above the earth where they remain to this day, transmitting their positions earthward with precise timing signals generated by the atomic clocks on board. Far below, GPS receivers can pick up the signals, then electronically calculate latitude, longitude, altitude, speed and compass direction anywhere in the world. Fully operational for military use by 1994, the basic system has since become available to the general public—a boon for users who include supertanker captains and recreational boaters, commercial and private aircraft pilots, surveyors and hikers. With a handheld GPS, it was now almost impossible to get lost.

Atomic clocks, with their one-second-in-1.4-million years precision, should have satisfied even the most rigorous of minds—but they didn't. A dozen research groups around the world, including a team of physicists at the U.S. Naval Observatory in Washington, D.C., are developing something called the cesium fountain atomic clock. Within the next few years, these new clocks, based on a process that uses supercooled atoms, and achieving an accuracy of just one second lost in 313 million years, will be operational.

And at the National Institute of Standards and Technology, in Boulder, Colorado, scientists are working on an even more advanced atomic clock, one that functions independently of gravity, a distorting variable in this system of time management. In order to accomplish this, a working model of this clock indeed will operate outside gravity—in space. The clock is slated to be placed aboard the International Space Station in 2004.

The atomic clocks of today and tomorrow may not be as attractive to the untrained eye as a 17th-century English pendulum clock in a seven-foot-tall hand-carved walnut case, or a gilded 18th-century French mantel clock veneered with lapis lazuli. But whether in a high-security Navy lab, the Royal Observatory in Greenwich, England, or the National Museum of American History, everyone who works with these tellers of time seems to do so with a passion that borders on obsession. Declares David Todd, who restores antique clocks in the NMAH collection, "Once you get interested in time, it grabs you and doesn't let go."

"We call it a disease," concedes David Thompson at the British Museum, "but it's also a marvelous obsession. The study of clocks is a coming together of so many things: science and technology, decorative arts, social history and economics. Holding Harrison's H4 in my hands sends serious shivers down my spine."

Obsessed or not, horologists agree that even with a clock that will miss no more than a second every trillion years, unbuilt as yet but conceivable, time will remain elusive—and mysterious. "What is time?" asked Saint Augustine 1,500 years ago. "I know if no one asks me. But if I want to explain it, I don't know how."

Writers Per Ola and Emily d'Aulaire are based in Connecticut.

An artisan-clockmaker of the Renaissance produced this timepiece in the form of a sailing vessel, c. 1580, for a royal patron.

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THE BOYS CHOIR OF HARLEM

BY ANDREA BARNET

IT IS FRIDAY AFTERNOON AT the Choir Academy of Harlem. Leaning against a grand piano, director Walter Turnbull surveys the bleacher of boys in the school gym. A big, barrel-chested man in suit pants and suspenders, dress shirt and tie, he exudes a starchy, old-world formality mixed with the sternness of a country preacher.

"There's too much talking," Turnbull bellows, eyeing the boys sternly. He scans the rows, then points.

"Who's missing there? David? This is a problem for me because David is never dependable," he snaps. "I don't care if you sing like the angel Gabriel," he adds with agitation. "If you can't be depended on, what good are you?" Turnbull's fingers sail along the piano keys and the boys begin to sing.

"Focus, please!" he barks. The 40 boys are working on Handel's *Messiah* for a concert they will give in two days, one of more than a hundred they perform each year. In addition to classical music, their eclectic repertoire includes gospel and spirituals, Gershwin show tunes, Duke Ellington jazz, Scott Joplin ragtime and a pop medley.

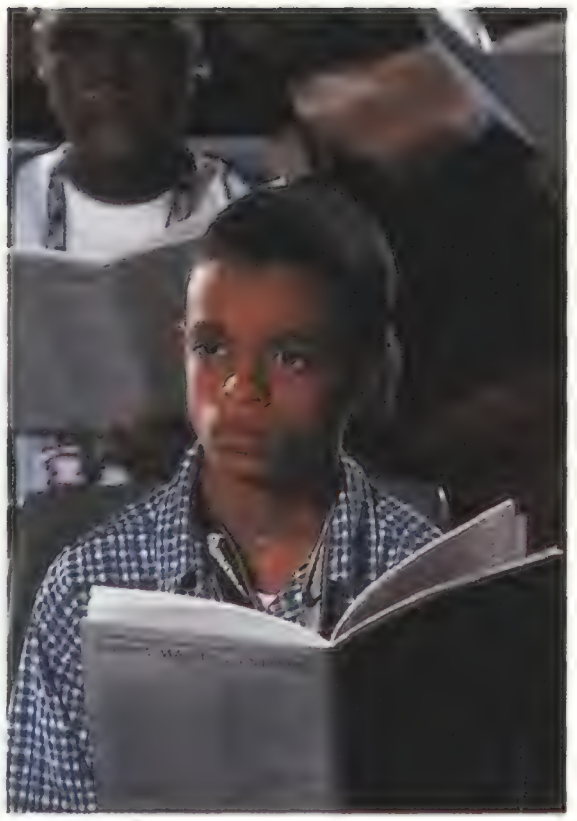
"Stop!" Turnbull shouts suddenly. "It really sounds kind of wimpy, boys. Some of you aren't taking this very seriously."

The youngest boys are fourth-graders. Some still have baby fat. They stand rod straight, as they have been taught, arms at their sides, looking earnest beyond their years in burgundy ties and vests, gray pants and white dress shirts—the school uniform.

PHOTOGRAPHS BY RICHARD HOWARD

Before performing, the director and the choir meditate (top right) and later conclude the concert with a rousing gospel.

Sings a Song of Hope



"Fortissimo!" Turnbull shouts exuberantly. "Very good soprano!" He sings a few bars and the boys repeat. Suddenly he hurls out his arms. "I want a deeper sound," he cries. "That's what makes the Boys Choir of Harlem different."

What makes the Boys Choir of Harlem different is not just their sound. It is an educational philosophy that stresses discipline, hard work and responsibility as well as musical mastery—what Turnbull calls a classical education. "A choir is a good starting point for building character," he says. "Since the 14th century, choirs have been used to educate boys. What I am doing is adapting that concept to a 20th-century inner-city model.

"What we're trying to teach these kids is to take responsibility for themselves," he adds. "I say to them, 'To be successful, you must work, you must be responsible for your own education. If you don't do it, who will?'"

Turnbull speaks from experience. Reared in a fatherless, financially strapped family in rural Mississippi, he overcame a substandard segregated school education to graduate from the state's Tougaloo College. In 1966, he moved to New York to earn his master's degree at the Manhattan School of Music. He dreamed of a career as an operatic tenor and landed several roles, but ultimately found theater work too erratic and racial barriers in the opera world insurmountable. Eventually, he took a position teaching music at a junior high school. Full of energy and ideas, and with religious roots since childhood, he also volunteered as music coordinator at a Harlem church.

Turnbull's love of music soon inspired him to start a youth choir. In 1968, on a Saturday afternoon, 20 boys came to the basement of Ephesus Church for the first rehearsal. Early on, the sweet, angelic sound of the boys choir was greeted with enthusiasm. But the brutal realities of being poor and black and living in the inner city were never far from the rehearsal room. For many boys, crime and drugs were more familiar than bicycles or schoolbooks. Most came from families on some type of public assistance. Some had fathers they had never seen, or brothers in jail. Few had ever had a man they could look up to.

Incorporating the choir as a nonprofit organization in 1974 increased donations and enabled Turnbull to address these issues with counseling and tutoring programs. The choir grew in size and artistic achievement. But each year promising boys slipped through the cracks, their progress undermined by inadequate schooling and mean streets.

Turnbull's solution, after many years of struggle, was the establishment in 1987 of a special school for members of the choir. Part of the New York public school system, the academy offers a rigorous education combined with conservatory-quality artistic instruction for grades 4 through 12. (A girls choir was started in 1979 and girls were admitted to the academy in 1993.)

Today, that modest ensemble of 20 boys has grown into an internationally acclaimed choir that boasts 250 members and has performed around the world, including concerts in Japan, Hong Kong, Singapore, Israel and eight tours in Europe. The choir has sung at the White House for the past four Presidents, at the 50th-anniversary celebration of the United Nations and for Pope John Paul II's sunrise mass in Central Park. It was the subject of an Emmy Award-winning television documentary, featured on two Grammy-winning albums and the recipient of President Clinton's 1997 National Medal of the Arts award. It is a success story with few parallels. Yet, during a break in a recent rehearsal, Turnbull demurs. "There are no miracles here."

As the rehearsal gets rolling again, Turnbull's concentration is palpable. He raises his hand. Silence. Then the sound of violins plies the air, followed by the first seraphic strains of the *Messiah* from the throat of a soloist. The notes flutter and rise, then suddenly the room is filled with music as the rest of the choir joins in, their voices weaving a complicated fugue, building into soaring columns of pure sound.

"Bravo!" Turnbull cheers, at the end of the first passage. "That's it. That's good!"

When you step from the subway at 125th Street and 8th Avenue, you enter the heart of Harlem. Boarded-up brownstones share the block with secondhand furniture shops, small grocery stores, seedy bodegas. Street vendors fringe the sidewalk. Door stoops are edged with debris.

Walk two blocks north, however, and the scene changes. At the corner of 127th and Madison sits a modern building with polished linoleum floors and sleek tiled walls, crayon-colored stairwells and spacious classrooms. Home to the boys choir since 1993, it feels like a refuge.

A hall door swings open on a typical school day, revealing a room full of boys wearing headphones and practicing keyboarding. Next door, students wielding drumsticks

Walter Turnbull (left) teaches voice at summer camp; (above) Christian Jackson, front, and Stephen Hill listen attentively.

tap out rhythms on rubber pads, creating a patter like rain on a roof. Down the hall, ninth-graders struggle with the German pronunciation for Brahms' "Zigeunerlieder" (gypsy songs). Theory, composition, sight reading, voice and more are also part of the music instruction, which lasts 90 minutes a day. Academic subjects include math, science, history, English and computer class. Each day ends with a choir rehearsal that runs from 2:30 to 6:30.

Turnbull's theory is that music can lift people above particular circumstances and inspire the heart. "To change behavior and bad attitudes," he says, "this is where we need to be—inside the heart."

Recalling an 11-year-old's comment after rehearsing a passage from a German opera, Turnbull adds, "They feel it. He said, 'Oh, Dr. Turnbull, the Gluck is so beautiful, it just gets to your heart.' If something reaches them that way, they will return to it."

While music is the motivation, the road to success for these boys is paved with tough love and unrelenting discipline. Conformity is the rule at the choir, hard work the currency.

"There is a Boys Choir of Harlem way of doing things," says Turnbull. "We want our kids to carry themselves in a dignified way, to be concerned about how they look and how they dress. We want them to feel good about themselves. There's a way to act in public, and at table, a code of manners just like any mom or dad would want. We take on that role because in so many instances kids come to us without any sort of social awareness."

Accompanied by his father, Clark, fourth-grader Chandler Higgins walks along Harlem's East 127th Street to the Choir Academy.

The choir's mandate is to "reinvent lives" and give boys a "chance to shed that former skin," says Frank Jones, head of the counseling department. The process starts at summer camp, during a three-week retreat to the rolling hills and bowered walkways of the Skidmore College campus in rural Saratoga Springs, New York.

It is 8:30 on an August morning. In a cool, dew-sodden meadow, worlds away from the blistering summer streets and illegally tapped fire hydrants of central Harlem, about a hundred inner-city boys, dressed in shorts and nylon jackets, break into jumping jacks. They run in place, shaking out their arms until they dangle.

An hour later, the group assembles in a small auditorium for voice exercises. Dr. T, as the choristers call Turnbull, moves through the rows, tilting his head slightly, listening intently to each voice. He touches his hand to the back of one boy, straightening his posture. He smooths a collar, adjusts a shirt, mothering as he moves down the line. Sometimes he leans in so close, his ear nearly brushes a singer's face. Suddenly, his hand thumps down on the head of a boy who isn't projecting. "Why aren't you singing tall?" he chides. He grins at him devilishly, as if to say, I caught you, I caught you unprepared. The rigorous musical training is the blueprint, but the lessons imparted apply to every aspect of the boys' lives.

After lunch and a swim, 60 boys assemble for choreog-

raphy class. They stand in lines, tapping out steps. One youngster keeps slipping behind. An older boy takes him by the hand and coaches him until he gets it. Mentoring is an integral part of the choir's philosophy. "A team is only as strong as its weakest link," Turnbull often tells them.

Camp is also a time to solidify the list of hopefuls for the touring choir. "It's really about how hard you work," says 15-year-old Matthew Gadsden, a member of the performing choir. "If you always give your energy on stage, if your schoolwork is good, if you don't miss rehearsals, you'll get picked."

In the evening, after dinner, there is a magnificent Schubert piano concert performed by two of the teachers. At the end, the boys give them a standing ovation. Turnbull steps to the stage and compliments the boys on how well they've spruced themselves up. He praises them for refraining from hooting, "unacceptable at a music concert," he tells them. Then, abruptly, he stops. Someone, it seems, has rustled a program. Spying the perpetrator, he orders him forward. He's a young, pudgy boy with glasses. As punishment, Turnbull orders him to sing a hymn. The boy opens his mouth, stammers, but nothing comes out. "Go on," Turnbull exhorts. "Sing! Sing!" As the others file out, they seem unfazed. Clearly it's a moment of public mortification most know firsthand.

But if Dr. T is a formidable disciplinarian, he is also playful and very loving. During a rehearsal he clowns around, miming a slouchy character en route to his seat. If the boys reach a high note especially well, he'll call out gleefully, "Don't goose me!" A student who recently made the national honor society is singled out. "James," Turnbull says proudly, "you knew you could do it, didn't you?" He wraps his arm around the boy's head, chucking his chin affectionately.

"When I first came in the ninth grade," says Rosson Cundiff, a tall, self-possessed young man with a crinkly-eyed smile who now attends Virginia Union University, "everyone tried to scare me about Dr. Turnbull. But I love him. He's the most dignified person I've ever known. He's always got his head high, no matter what. Everyone makes mistakes: he taught me that. You own up to your mistakes, then you move on. But you keep your head up. You have a commitment. You don't give up."

And they don't. When the choir tours, wake-up calls are at 6 A.M. Sometimes in a single day, the boys rehearse, perform, meet and greet the audience, and board buses to another city, arriving after midnight. Classes, conducted by tutors, are held every morning in hotel conference rooms.

Only certain types of boys can take the pressure. The choir tries to audition every third-grade boy in the academy's school district, as well as many older children—approximately 3,000 each year. Of these, fewer than 150 make it. No formal musical training is required.

The auditions at P.S. 197 in Harlem begin moments after

the morning school bell. Frank Jones, tall and athletically built, stands before a class of third-graders. "I'm going to give you the opportunity to demonstrate your musical talent," he tells them. "I'm going to ask you to sing. Now, no Puff Daddy, no Brandy," he adds knowingly.

For the next few hours, groups of three and four boys are summoned to the hall. They wear Day-Glo sneakers, oversize shirts, baggy pants. Their faces are eager, open. Many have big new teeth, gaps where others are missing. Jones stands them in a row, then demonstrates three simple notes. "Ah, ahh, ahhh," he sings. One by one, each child is told to mimic what he hears. Some giggle, and one won't sing—he smiles shyly, twining his legs. A second starts to moonwalk as he waits. Jones stops him and gently sends him back into class.

Each audition takes about two minutes. Jones scribbles a notation on his clipboard and it's over. He is looking for potential, nothing more.

The next step takes place at an evening informational meeting for parents the following week. More than 15 letters of invitation have been sent out. Five parents—all women—show up. Four have never heard of the choir. As they sit listening to the speaker, however, they become visibly excited.

One of the parents, a handsome woman with braided hair, raises her hand, her face concerned. Her three children sit beside her, fidgeting. "What about costs?" she asks.

There is an annual choir membership fee of $475, the woman is told. And the boy's family must buy his uniform. The rest is provided. Choir families don't have to have much money, and most, in fact, don't. Seventy percent are single-parent households headed by women; 55 percent live below the poverty level.

"If a parent shows up at this meeting, that's a good sign," Jones explains later. "What we're looking for is some sort of support." The choir also looks for extroverted children. "In most schools, these are the troublemakers," he adds. "But these are the kids with fire and energy."

Kamel Carzan (top) and Barry Green-Hunt learn Dutch and music theory.

The carrot that keeps the boys motivated is the glory of performance. "After the show," says recent graduate Rosson Cundiff, "to see someone smiling, and then have them come up to you and say that you made them really happy, that makes you feel really good. Once you get that feeling, you don't want to let it go."

Even so, despite the choir's best efforts, some boys still don't make it. "It's hard," says Jones. "We lose some. Even the most dedicated and musically gifted youth are still at risk. These kids live with the knowledge that taking to the streets could happen to any of us. Our message is that you don't have to succumb to these pulls."

To this end, on school holidays, the academy becomes a community center to help keep the kids off the streets. Scheduled activities address a range of social issues, from substance abuse to responsible sexual behavior.

On Veterans Day, a reformed drug addict—a young black actor the boys recognize from his role in the 1992 movie *Malcolm X*—comes to perform. Pacing the starkly lit stage, dressed in baggy pants and a stocking cap, he reenacts his dead-end life as a junkie. He tells them about squandering every cent to score a fix, about living filthy and homeless in a subway entrance and nearly losing his fingers to infection. "Never think that getting high is an option," he cautions them.

The counselors work diligently to break down images that link drugs and violence with masculinity. In the boys' milieu, explains Jones, "going to jail is held as the ultimate expression of manhood. At the choir we don't tolerate fighting. We're trying to supplant the community of the streets."

For a 14-year-old named David and many other boys, the choir is a second family. "Dr. Turnbull has been a father to me," David says. "My real father is locked up upstate."

For single mothers like Yolanda Toby, the choir provided a support system during the difficult years of her son's adolescence. "Kids don't come with manuals," jokes Toby. "You need to talk to somebody. Frank was always

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Eleventh-graders Jetaime McFadden and Hector Mendoza, Jr., engage in a momentary tête-à-tête in math class.

available. There were many times when I just called and cried. Frank always gave me a lot of insight. Plus he and Walter reinforced the values I was trying to teach my son."

"This place is about more than just the music," says Cundiff, who also grew up fatherless. "It's about being a decent human being."

The boys see the message reinforced by the alumni, 98 percent of whom go to college. They see it in the professions they enter, in their increasing mobility. They become teachers, doctors, lawyers; their lives expand far beyond the threshold of their old neighborhoods.

Surprisingly, only one percent pursue careers in music. "You really have to want music," explains Turnbull. "It doesn't pay anything, and in this society it isn't revered."

Among the few who see music in their future is 15-year-old Kevin Miller, who wants to be a composer. He has already written his first symphony, and one summer he sang with New York's Lake George Opera orchestra, which also performed his *Symphony #1*.

Another chorister, Sean Guerrier, links the discipline of music to other professions. Sean wants to be a surgeon. When a visitor observes that medical school involves a lot of difficult memorization, he answers without missing a beat: "Memorizing Vivaldi's *Gloria* is a lot of work, too."

One somber note in the choir's message of hope is the group's precarious finances. With no endowment and less than half its $3 million annual budget covered by concert receipts, the choir depends on private donations, which must be raised each year. Sometimes finances are so tight the staff goes on four-fifths salary.

In many ways the choir is a victim of its own high profile. The polished performances "lead people to believe that the choir is rolling in dough," Turnbull says. "The fact is, it's an ongoing, day-to-day struggle."

It is a Sunday in December, the afternoon of one of the choir's most important concerts of the season. One hundred and ten boys are assembled backstage at Lincoln Center, where in an hour they will perform in Avery Fisher Hall with the New York Philharmonic orchestra.

The room is crowded. Near the door, trays of Chinese food are laid out on a table, the remains of a dinner the boys ate earlier. A woman from wardrobe fits two choir members who have jumped a jacket size. Boys tap their feet, smooth their hair. Most sit in their seats, talking. One

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Garbed in red gown and ruff, worn for holiday performances, soprano Malquan King prepares Mozart's *Coronation Mass*.

pulls out a small pocket mirror. Another whispers into a walkie-talkie to a friend two rows back. A third furtively plays with a yo-yo. Turnbull gathers the sopranos around the piano for some quick voice exercises. Outside the open door, a boy with a handheld gadget steams a hangered white shirt he holds in the air. Another table is laid out with 50 black bowler hats draped with white gloves.

"Mr. Jones!" calls Turnbull, glancing at his watch. "I need time now. I need to gather my energy. I need everyone here to gather energy," he adds. "Soloists, I'll see you in my dressing room, please."

A bit later, looking dapper now in bow ties and blazers, the boys gather in the green room.

"The next voice I hear gets sent home," booms Jones. "Now I've asked twice for prayer places." There is silence. The boys form a large circle, cross their arms and take each other's hands. Turnbull, elegant in black tie and tux, joins the circle. Heads bow. "We thank you, God, for giving us the gift of voice," he says.

"Amen," respond the voices. Hands drop.

Turnbull walks down the line. He pats cheeks, offers words of encouragement. "Smile," he says to one boy. "You sounded really good earlier," he whispers to another.

Minutes later they are backstage. Two boys creep up to the curtain and peer out. "There's my aunt right there!" whispers one. "I see my mother," hisses the other. Several horse around and exchange high-fives.

"This is a two-minute call," comes a voice from the intercom. The boys don't appear nervous, though several kick each other's shoes. Herman Shockley, who is 17, is the last in line. He has a broad animated face and is a bit of a cutup, a boy with enormous spirit. The signal is sounded and the boys begin filing onstage. Herman does an abbreviated shuffle, a quick truncated breakdance, stopping just a nanosecond before he steps into the lights.

Over the next two hours, the boys perform Monteverdi and Vivaldi, spirituals, Christmas carols and gospel music. They slip backstage and return in striped vests and bowlers, white-gloved hands pumping the air. They sing a ragtime medley, then strut to a lively Duke Ellington doo-wop, "It Don't Mean a Thing." They slip offstage again, returning in long red robes with ruffled white collars, the picture of pious choirboys. Another costume change, and they break into a jivey hip-hop for the last number. As the curtain falls, the choir gets its usual standing ovation. As always, the charm and musical virtuosity of the Boys Choir of Harlem have won every heart.

Much later, stage lights behind them, jackets returned to their racks, no tired boys file onto buses parked at the curb. They ride back to Harlem, past pawnshops and crime-ravaged housing projects and litter-strewn lots, to the Choir Academy. Near the back of the school, commuters on the rail lines pass overhead, shuttling back to the suburbs from the city, "seemingly oblivious of the lives underneath the rusty trestles. If [those] passengers only knew the joy of Harlem," Turnbull has written. "We are a song of hope. . . . We know that these children, who walk past drug dealers, murderers and prostitutes every day, can be anything they choose."

Andrea Barnet lives in New York City and writes about the arts. Richard Howard has shot more than 50 stories for Smithsonian.

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Age	10 YEAR	15 YEAR	20 YEAR	25 YEAR	30 YEAR
35	$ 103	$ 125	$ 145	$ 183	$ 205
40	$ 123	$ 158	$ 185	$ 238	$ 260
45	$ 190	$ 215	$ 253	$ 330	$ 385
50	$ 253	$ 290	$ 363	$ 490	$ 495
55	$ 360	$ 413	$ 550	$ 835	$ 1,015
60	$ 503	$ 608	$ 845	$ 2,135	$ 2,400
65	$ 775	$ 975	$1,593	$ 3,900	$ 3,900
70	$1,338	$ 1,600	$2,970	$ 7,220	$ 7,220
75	$2,275	$ 4,870	$5,820	$10,440	$12,420

Male Premiums

Age	10 YEAR	15 YEAR	20 YEAR	25 YEAR	30 YEAR
35	$ 123	$ 138	$ 165	$ 223	$ 253
40	$ 148	$ 183	$ 225	$ 288	$ 335
45	$ 225	$ 300	$ 360	$ 450	$ 513
50	$ 338	$ 455	$ 525	$ 730	$ 828
55	$ 500	$ 670	$ 768	$ 1,638	$ 2,330
60	$ 783	$ 990	$1,265	$ 3,630	$ 3,630
65	$1,330	$ 1,650	$2,693	$ 5,250	$ 5,250
70	$2,448	$ 3,175	$4,860	$ 8,790	$ 8,790
75	$4,400	$ 7,443	$9,600	$13,260	$15,030

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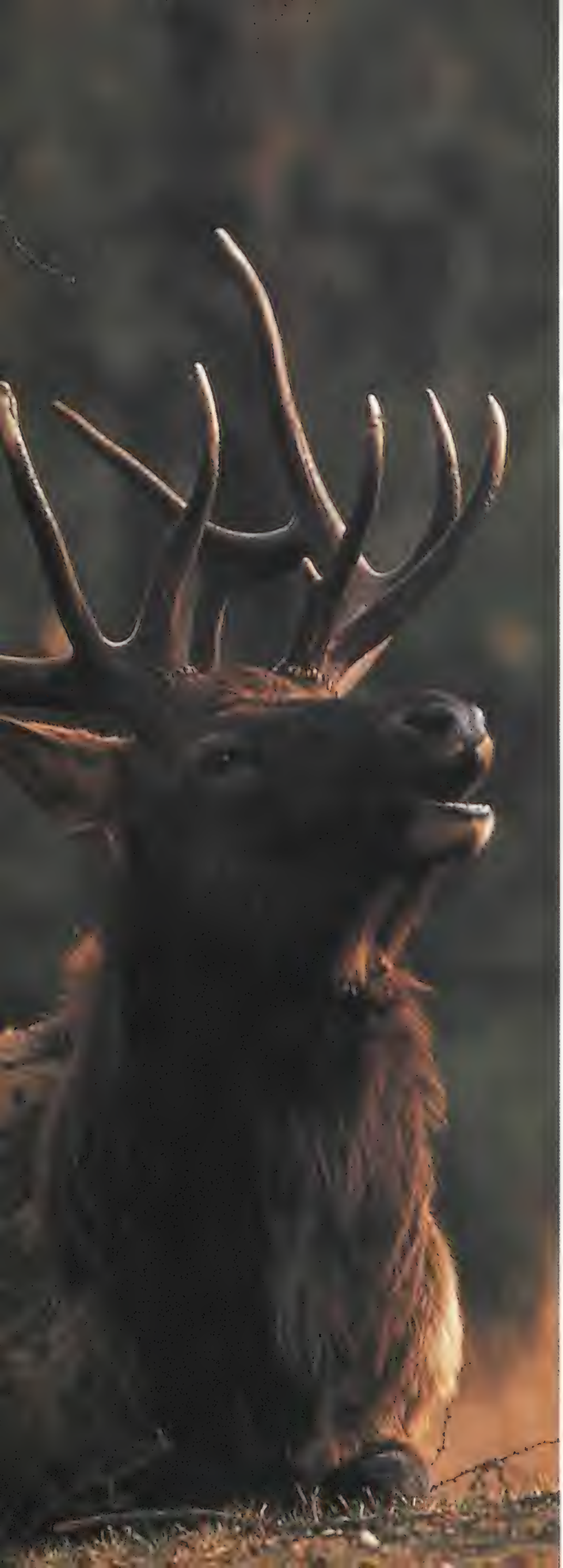


IT IS SHORTLY AFTER DAWN IN THE mountains of Utah, as the last clouds from a storm that dumped several inches of fresh snow on the Wasatch Range blow off to the east. A pair of golden eagles glides from the top of a high, red bluff on Castle Rock Ranch, hard on the Wyoming border, as our convoy of pickups and a big livestock trailer threads its way up a twisting canyon between low hills.

The temperature is near zero, and the shin-deep snow squeaks beneath the tires. The white hills are stitched with the sinuous trails of elk; the day before, a helicopter survey revealed more than 900 of the animals in this area, and here and there we see small bands moving through

THE RETURN OF THE ELK

BY SCOTT WEIDENSAUL
PHOTOGRAPHS BY GLENN OAKLEY

the stunted junipers and aspen thickets.

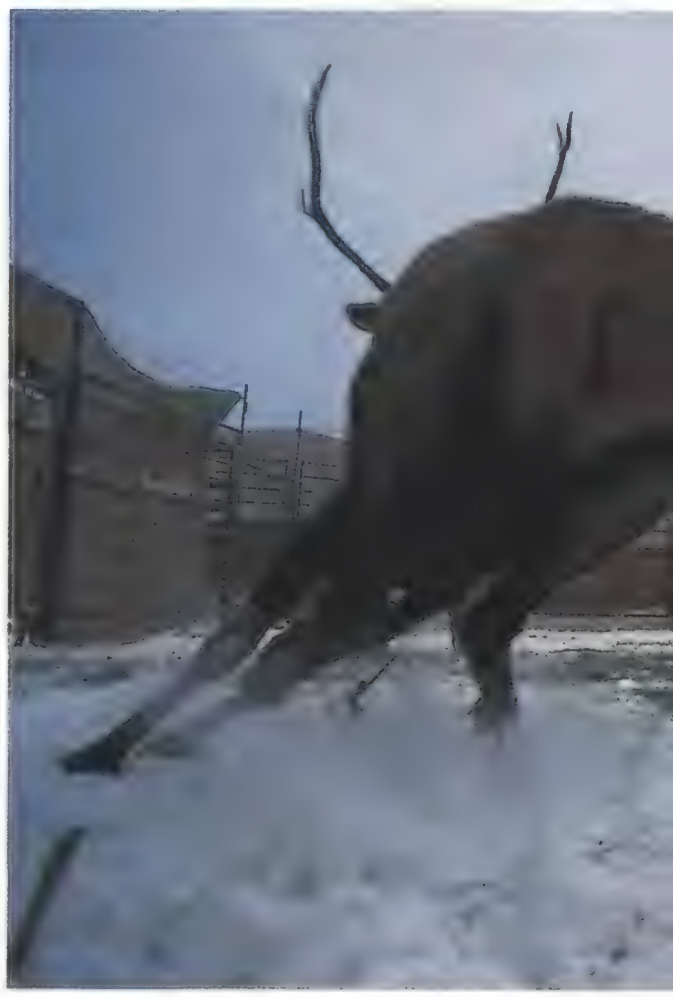
When people think of elk, this is the kind of scene that usually comes to mind—windswept vistas in the Rocky Mountains, snowcapped peaks rising against cerulean skies. But elk were once an Eastern animal, too, drifting through hardwood forests from Georgia to southern New England. After disappearing more than a century ago, the elk are coming home, and some of these Utah animals, though they do not know it, will soon begin a journey to the rolling Cumberland Plateau of eastern Kentucky, where Daniel Boone once hunted them.

A seven-point bull thrives in Pennsylvania, where elk were once extinct.

They are part of a major effort to restore elk to their former haunts east of the Great Plains.

I am with a dozen men on this frigid January morning, a mix of biologists from the Utah Division of Wildlife Resources, the Kentucky Department of Fish and Wildlife Resources, the University of Kentucky, and the Rocky Mountain Elk Foundation (RMEF), a private conservation group that is funding the reintroduction. We gather around a huge corral trap, 40 feet wide and 10 feet high, its sides covered with a screen of burlap; from inside, we hear the stamp of hooves and the snort of animals caught the night before. Putting my eye to a slit in the fabric, I can see the cause of all the ruckus—16 elk nervously pacing, mostly cows and large calves, but also a young "raghorn" bull, five points on each of his high, thin antlers, who somehow squeezed between the narrow steel bars across the trap's entrance door that are designed to keep out antlered males. The low sun, which has just broken through the clouds, backlights the animals inside, and like Balinese puppets, their silhouettes move across the burlap, two-dimensional and crisp, much larger than life.

The bull is a problem; on the long ride to Kentucky, he could be a menace to the other elk, so he'll be kept back while the cows and calves are loaded. (Younger males—including yearlings—need not be separated.) A driver backs up the cattle trailer to a chute on the side as Lou Cornicelli of Utah DWR and Tom Toman, conservation program manager for the RMEF, ease inside the trap, hoping to cut the bull out of the herd. This is tricky, hazardous work—any elk



Biologists at Utah's Castle Rock Ranch spread alfalfa around a corral trap to draw elk for transfer to Kentucky. A bull (below), mistakenly caught in the trap, is separated from the cows and calves.

that feels cornered may rear back and pummel a person with its front hooves, sometimes with deadly results, but the danger from an antlered bull is even greater.

At first, all goes well. Half the cows crowd down the chute, their hooves ringing sharply against the metal floor of the trailer. But then the bull darts around Toman and Cornicelli, headed straight for the trailer door.

"Cut him off!" Toman yells. University of Kentucky researcher Jeff Larkin and I jump to the narrow gap between the chute and the trailer, grabbing a piece of burlap hanging from the end of the passageway. Arms outstretched, but careful to keep our bodies out of his path, we hold the feeble barrier in front of the bull.

"Watch it—if he comes at us, get out of his way fast," Larkin hisses.

It works. The elk crowds against the burlap, his head only two feet from mine, but he stops. Steam pours in white jets from his nostrils; his eyes are wide, and dark as coffee. The brow tines of his antlers jut out above his forehead, long and curving, the color of old bone. He is so big, so vital, so potentially lethal, yet Jeff and I hold him back with a length of old cloth.

Someone—I can't see who—clambers into the truck and starts the engine; as the trailer inches away, the door is swung shut. Now there's empty sky in front of the bull, who tosses his head like a nervous horse, and I know we won't hold him much longer. We drop the burlap, and the bull explodes out of the narrow confines of the chute, spraying us with snow, and bounds up the hill, his head high and his antlers thrown back. Larkin and I both draw long, uneven breaths.

Look at a map of the Eastern states, and the names leap out—Elk River, Elk Grove, Elkhorn City, Elk Run, Elk Valley, dozens and dozens of variations on the theme. Like many place-names, they preserve a vanished, nearly forgotten truth. Before the East was logged, tamed and farmed, to become a placid land of cottontails and suburbs, it, too, was the home of a creature the color of wheat that the Shawnee called *wapiti*, and which the European settlers named elk. The bugled mating cries of the Eastern elk, eerie and quavering, rang up and down the Appalachians, across the Great Lakes and southern Ontario, through the Ozarks and the prairie savannas of the Midwest. The

The bull is so big, so vital, so potentially lethal, yet we hold him back with a length of cloth.

enormous animals moved through the dark forests like phantoms, the massive, multipronged antlers of the bulls stretching five feet or more in length.

But history wasn't kind to the Eastern wapiti. While other subspecies of elk survived across the rest of the continent, by the 1890s, uncontrolled hunting and habitat destruction had exterminated the Eastern elk. Attempts to bring in Western transplants, undertaken widely in the first years of the 20th century, generally failed. Yet today, the elk is experiencing an unexpected renaissance in the East, as state after state tackles the task—difficult and sometimes controversial—of restoring this lost monarch of the hardwood forests.

William Penn wrote of "elck as big

Tom Toman, of the Rocky Mountain Elk Foundation, takes a break during the Utah-to-Kentucky relocation. The elk caught in the corral trap are moved by livestock carrier (top) to a nearby ranch for a medical checkup and a radio-equipped collar.

as a small ox" in his colony of Pennsylvania, and while his letters about the New World often had a whiff of salesmanship, this time he wasn't exaggerating. Elk are huge, with cows weighing 500 pounds, and mature bulls almost twice that. Unlike a deer with its shaggy tail, an elk has a short stub surrounded by a large, light patch—the source of its Shawnee name, usually translated as "pale rump." Elk are imposing and potentially dangerous, especially during the fall mating, or rutting, season, when males lock antlers in grueling, sometimes deadly fights, and are quick to take offense with any intruder. Elk use their racks for self-defense, too. When threatened by wolves, old-timers said, a bull would retreat to an "elk rock," a ledge jutting out from a steep hillside, where his flanks were safe from attack while he gored any wolf that came too close.

Such tactics were useless against hunters with dogs and guns, however, and the elk disappeared quickly from its Eastern range—extirpated from South Carolina by 1737, Vermont by 1800, northern New Jersey by 1805, New York by 1847 and Kentucky by 1850. Pennsylvania was one of the final strongholds, but even there, the wapiti's range contracted steadily; by the beginning of the Civil War, the last elk herds were restricted to the rugged, sparsely populated Allegheny Plateau, where market hunters kept up the pressure.

These were the days before game laws, when hunting was a necessity and the concept of sporting chase was foreign; the hunters used dogs to bring the elk to bay, often in midwinter when the herds gathered around dependable sources of food and thus were more vulnerable.

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Elk watching is popular with tourists, especially during mating season when the bulls are displaying.

Exactly when the last Eastern elk fell is unclear, but whenever the final shot was made, by the late 19th century, elk were extinct east of the Great Plains—and barely hanging on in the West. Uncontrolled hunting had exterminated them on the Plains, and only a few populations remained in the mountainous areas, including Yellowstone National Park. But as the protected park herds began to grow, managers looked for a place to send the surplus. Eastern states, eager to bring back the wapiti, bought hundreds of Rocky Mountain elk.

Early attempts to restore elk in the East were, by and large, a failure. New York stocked several hundred in the Adirondacks from 1901 to 1932, but they never thrived, and the last offspring died in 1953. Likewise in Virginia, where two small herds lasted about 50 years before vanishing in 1970, and in North Carolina, which tried to restore elk twice without success, the last time in 1935.

The reintroduced elk managed to hang on in only two states: Michigan, where animals were released in 1918, and Pennsylvania, which stocked almost 200 elk between 1913 and 1926. At first, the elk did well; Pennsylvania's herd numbered an estimated 500 to 600 by the 1920s. As a result of an open hunting season (anyone who bought a general hunting license could kill a bull), along with poaching, shootings by farmers trying to protect their crops, habitat loss and an outbreak of a parasitic disease called brainworm, the herd was reduced to a dozen or so by the 1940s.

Pennsylvania's elk herd, all but ignored by game managers, clung tenaciously to existence through the middle decades of this century, often numbering fewer than 35 animals. It wasn't until the 1970s that the Pennsylvania Game Commission and the state Bureau of Forestry took an active interest. The result was spectacular; by helping farmers fence off hard-hit fields, thus reducing crop-damage shootings, and by providing quality graze on reclaimed strip mines, the state has grown the herd from 183 in 1992 to more than 500 today; increasing by 12 to 15 percent a year, it could soon break 1,000.

This has been both a boon and a bane for the residents of the 200-square-mile area where elk watching has become incredibly popular with tourists, especially during the rutting season when the males are bugling, displaying and fighting. But the cars clog the twisting mountain roads, and on some weekends the 243 residents of rural Benezette Township are overwhelmed by more than ten times that many visitors.

While the growing elk herd has begun edging out from its Allegheny Plateau redoubt, biologists believe they can accelerate the process and reduce the density of the herd by transferring it deeper into the rugged, lightly inhabited counties of north-central Pennsylvania where elk once roamed. But safely moving the huge, skittish mammals is not a simple matter. When the Pennsylvania Game Commission (PGC) decided to implement this plan last year, it turned to the Rocky Mountain Elk Foundation.

Created in 1984 by four Montana hunters, the nonprofit RMEF now counts 115,000 members and raises millions of dollars each year for research and habitat acquisition. The foundation has spent more than half a million dollars in Pennsylvania, helping the state buy critical elk range and fencing to keep elk out of farmland. Then they sent Tom Toman to help PGC biologist Rawley Cogan organize the first elk transfer.

A former regional supervisor with the Wyoming Game and Fish Department, Toman spent 24 years in the field, often trapping as many as a thousand elk each winter for research or relocation. Now Toman brings his expertise to the RMEF where he works with experts in states trying to expand or reestablish their own

Rawley Cogan, a Pennsylvania Game Commission biologist, has seen such an increase in the relocated elk herds in his state that many have been moved to more remote areas.

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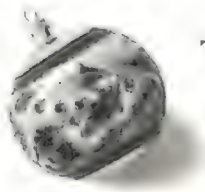

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herds. In early February 1998, Toman stepped to the front of a crowded hotel meeting room in the small, Pennsylvania mountain town of St. Marys. More than 40 people—wildlife biologists, foresters, college professors, graduate students and game wardens—listened nervously as he outlined plans to trap several dozen elk the next morning in a huge corral trap, give them physical exams, draw blood and tissue samples for genetic tests, fit them with radio collars and ship them by trailer to a release site two counties to the east, where elk have been gone for generations. The transfer had drawn public attention, and few in the group had ever worked with elk before. Their fear of a dreadful misstep was palpable.

As Toman talked, he used video of other captures to illustrate his points, and the crowd calmed down. Tall and thin, Toman looks like a tough-as-nails cowboy, but his speech was peppered with comments about "creating comfort zones for the elk," about "gentling them" into doing what the biologists want them to do.

"I want everyone to adopt an elk," Toman told the novice handlers the morning of the move. "When we get them into the chute I want each of you to pet your elk, talk to it. I want you to bond with that elk." Under his direction, each elk caught in the corral trap was gently urged into a long, narrow chute, where a cloth blindfold was stretched over its eyes, and a volunteer, speaking in low, reassuring tones, began to gently stroke its throat. The elk visibly relaxed as the soft radio collar was fitted to its neck, ear tags were attached and vials of blood were drawn.

"An elk's first line of defense is to run away, so I get them to run where I want them to go."

"It's traumatic enough, to run them into the chutes and hang hardware around their necks, so we want to minimize the impact as much as possible," says Toman. "I've watched people, learning what works and what doesn't work. I've seen some folks try to cowboy the animals and end up hurting them, or getting hurt themselves. An elk's first line of defense is to run away, so I just get them to run where I want them to go."

The transfer went off without a hitch, and by the end of the winter 33 elk had been moved to an enclosure along the Kettle Creek drainage, where they stayed for several weeks to get acclimated to their new surroundings before being released. Another 17 were moved in the early months of this year; the program will continue this winter.

While Pennsylvania is trying to expand opportunities for an existing elk herd, many other states are trying to restore the species for the first time. Kentucky, which lost its elk before the Civil War, now has a $900,000 initial grant from the RMEF, and it has embarked on a daunting, nine-year restoration effort. The project involves moving hundreds of the animals a year from Utah, and the first transfer is from the Castle Rock Ranch where I join Toman and the joint team of Utah and Kentucky biologists.

The area can ideally support about 1,900 elk, but instead there are nearly 3,000. Game managers conclude it is the ideal source of animals for Kentucky's project. "Since these elk have been declared surplus animals that can't be hunted by the public, and

Recently, the reintroduced elk in Pennsylvania's Benezette Township began to outnumber the village's residents.

because they're causing damage to agricultural lands, it's good to transfer them to a state that's trying to restore a species," Toman says. Elk were all but exterminated everywhere in the Rockies, and many states, including Utah, owe their herds to earlier relocations from Yellowstone. "So in a sense, this is a continuation of a long series of reintroductions," Toman explains. "It's Utah's turn to share something they received 70 or 80 years ago—this is just a new chapter."

From the site where the huge corral traps were placed, the day's catch of elk is transferred by truck two hours north to Hardware Ranch, a state wildlife area near Hyrum that has one of the few large elk handling and processing facilities in the Rockies. The ranch is a winter feeding area for hundreds of elk, and a popular destination for tourists, who can ride a horse-drawn sleigh among the placid herds eating hay. There is nothing placid about the elk we're moving, though; they stamp and snort in the trailer, and once released into the large, stoutly fenced enclosures of the handling facility, they move restlessly as Lou Cornicelli, Kentucky DFWR biologist Charlie Logsdon and the others examine them.

The relocated elk are fitted with radio collars, so biologists can track them after the release.

Before an elk can make the long trip to Kentucky, it must pass muster on several counts. Any that suffered injuries in the trapping process are kept back. The elk also undergo blood tests for tuberculosis, brucellosis and four other diseases before they are cleared; repeated testing indicates that elk in this part of the Rockies are free of chronic wasting disease, a fatal malady similar to "mad cow" disease. Those elk that receive the green light are fitted with radio collars, so biologists can track them after they're released. Once the team has cleared about 50 elk, the animals are shipped by truck—a single large, dark cattle carrier—on a nonstop trip that lasts about a day and a half.

Waiting for the elk at the other end of their journey is a different world—a realm of new sounds, new smells, new foods and new dangers. Instead of the familiar dry, juniper-cloaked mountains, the elk are released in the hills of eastern Kentucky, where grassy expanses of reclaimed strip mines are scattered among steep-sided ridges of oak. So far, the elk have made the transition smoothly.

Several days after helping the trap team in Utah, I join Larkin and a pilot in a small plane and fly over the rolling, mine-scarred landscape of eastern Kentucky. Sandstone cliffs cap many of the ridges, their faces pocked with small caves that overlook meandering rivers. From the air, it's easy to see the toll that strip mining has taken on the Cumberland Plateau; the tops of mountains have been scraped off and rubble buries neighboring valleys, creating huge, flat areas of grassland—a technique known locally as "hollow-fill" mining. As devastating as strip mining is for the environment, the reclaimed mines provide the perfect grazing land for elk.

Monitoring the elk once they're in Kentucky is Larkin's main responsibility, and we are looking for the first cohort, released during the winter of 1998. In all, 168 elk were brought to the state that year, of which 98 are

A Pennsylvania Game Commission biologist carries a dart gun to tranquilize a sick elk for examination in a vigilant effort to ensure that the herd stays disease-free.

still alive—a statistic that seems grim, but is what biologists had expected. Many of the fatalities followed the last shipment, which was stuck on the road for days in a Plains blizzard, greatly increasing the stress on the elk. In general, the mortality rate was about 10 percent—animals hit by cars, or killed in falls. One or two were shot by poachers, but game wardens let it be known that they have DNA samples for each elk, making convictions easier to obtain, keeping the poaching rate unexpectedly low.

"There's no perfect way to do it," Dave Maehr told me the day before. A conservation biologist at the University of Kentucky, Maehr oversees the monitoring effort by Larkin. "No matter how we do it, we have to move these elk great distances, and the biggest problems are associated with moving them." Tranquilizers might seem like a good alternative, but they are actually much riskier to the elk. According to Maehr, "sedating them is dangerous. On the road it is difficult to control their respiration, heart rate or body temperature," all of which fluctuate wildly when an animal is drugged.

Hunched over a radio receiver, listening intently through headphones, Larkin directs the pilot of our small plane with hand signals until we are racing in tight, nauseating circles just a few hundred feet above the treetops. Below us, lying unconcerned beneath a screen of young pines, are a collared cow and an uncollared calf—one of 30 born to the first batch of transplanted elk, an encouraging sign for the new herd's future.

Kentucky's elk restoration has been called one of the most ambitious wildlife reintroductions ever undertaken. When the project is completed in 2006, the state expects to have moved up to 1,800 elk and released them across a 14-county area.

"That's close to 3.6 million acres—a lot bigger than Yellowstone National Park, which is 2.2 million," said John Phillips, deer programs coordinator for Kentucky DFWR.

"East Kentucky hit all our criteria. It has less than 1 percent cropland, and while it was a little short on open land, it does have large blocks of reclaimed strip mines," Phillips said. The area is bounded on the west by Daniel Boone National Forest, a 693,000-acre tract that runs almost the width of the state and provides a buffer between the release areas and farmland to the west. Once the main reintroductions are finished, according to Phillips, the state may also move elk into the 200,000-acre Big South Fork, another national recreation area on the Tennessee border. In all, biologists believe, eastern Kentucky can support a herd of roughly 7,800 elk, eventually kept in check through a limited annual hunting season.

While Kentucky has been the most aggressive in restoring elk, it is not the only state pursuing that goal. After years as a forgotten species, elk are the new darlings of wildlife managers, and a half-dozen or more states are moving elk or considering it.

In 1995, Wisconsin released 25 elk from neighboring Michigan in the Chequamegon National Forest on an experimental basis, and it will decide next year whether to push ahead and increase the herd or remove the elk already in place. Feasibility studies are currently under way in New York, Virginia and Missouri. Great Smoky Mountains National Park expects to begin stocking elk in 2001.

Toman says the 800-square-mile park "has great potential" for a successful reintroduction, and it seems likely that elk moving out of the Smokies will eventually merge with those released 100 miles away in Kentucky, while Kentucky's will, in turn, mingle with animals released in southwestern Virginia, if that state decides to go ahead with restoration. One day, elk may again be found along the length of the Appalachians.

Not everyone is thrilled with the idea of new, large herbivores being added to the landscape. Kentucky had to drop one county from its reintroduction plan because of protests from local farming groups, and some deer hunters have worried about competition for food between elk and whitetails. (Biologists say it will likely be minimal, because elk eat grass while deer eat mostly bark and twigs.) In 1996, the Illinois Department of Natural Resources announced that it was

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Too many elk results in their getting "up close and personal," as this bull does during a stroll in Medix Run, Pennsylvania.

investigating the practicality of returning elk to the Shawnee National Forest in the state's southern tip. But when the feasibility study, funded by the RMEF, was completed, it suggested that the forest was so fragmented and interspersed with agricultural land that conflicts with farmers would be inevitable.

"The DNR decided not to bring elk back to that part of Illinois," Toman says. "But that's why we do feasibility studies. We don't want to put elk where the biological potential isn't there, and we certainly don't want to put elk where they're going to have a negative socioeconomic impact."

Kentucky is counting on the same kind of tourism boom from its elk that Pennsylvania and Michigan have enjoyed; this is especially important given the chronically poor economy that has afflicted this region for generations. Already, there are elk-viewing areas where the animals are frequently spotted. Many people drive through the heart of the new elk range specifically to watch for the herds. "I've seen elk every time I've been there," says Phillips, "except the time I took my family, of course."

Five days after they stepped into the corral trap in Utah, 40 of the elk I helped catch arrive in Kentucky, after a 31-hour drive from Hardware Ranch. They are released in southeastern Kentucky near Pine Mountain, about an hour south of the 1998 release and just 25 miles from the Virginia border. I leave Lexington at 3 A.M. with Maehr, Larkin and several other University of Kentucky researchers, and drive through a torrential downpour, passing small coal-country towns still dark at that hour. We follow a winding series of dirt and gravel roads that ends at a wide, grassy expanse of an old strip mine, where the cattle truck waits, its engine quietly idling.

It is 5:30, and the release is scheduled for 7:30. Already there are dozens of cars, and when the rain stops, more vehicles pull up the hill. Knots of people stand huddled against the wind, talking and waiting. Many are DFWR employees and local dignitaries, but most are local folks, often with children in tow, wrapped snugly in blankets. The wind begins to gust, then bellow, snatching caps and making my eyes water. By dawn there are several hundred people gathered below the dark, streaming clouds, and the crowd is infused with a sense of curiosity mingled with quiet, restrained celebration.

Finally, the handlers hush the throng and move to the trailer, slowly open the large doors on the side, then quickly step back, out of sight. After a long pause, one cow elk emerges from the dark interior, taking in the wide, rolling horizon of wind-whipped grass. She steps out slowly, cautiously; then, like water gushing from a jug, many more elk pour out the door, stumbling a bit. Finding their stride, their bodies brown against the sere grass, their pale rumps like spotlights in the dawn, they move off in a fluid run. The herd forms a compact body that flows across the land, down into a draw, then up to a higher knoll a quarter-mile to the east. Some stop at a small pond to drink. As the last few elk are ushered out the door they take hurried leave of the trailer.

The herd re-forms, then moves in a long line up to the crest of the hill, silhouetted against a bright slit of morning sky. "Oh, it's so beautiful," murmurs a man wearing an old camouflage jacket and an orange hat, standing beside me. His eyes are glistening. I don't think it's the wind.

Scott Weidensaul is a frequent contributor; his article on bird banding ran in October. Glenn Oakley photographed the story on dam removal in the November 1998 issue.

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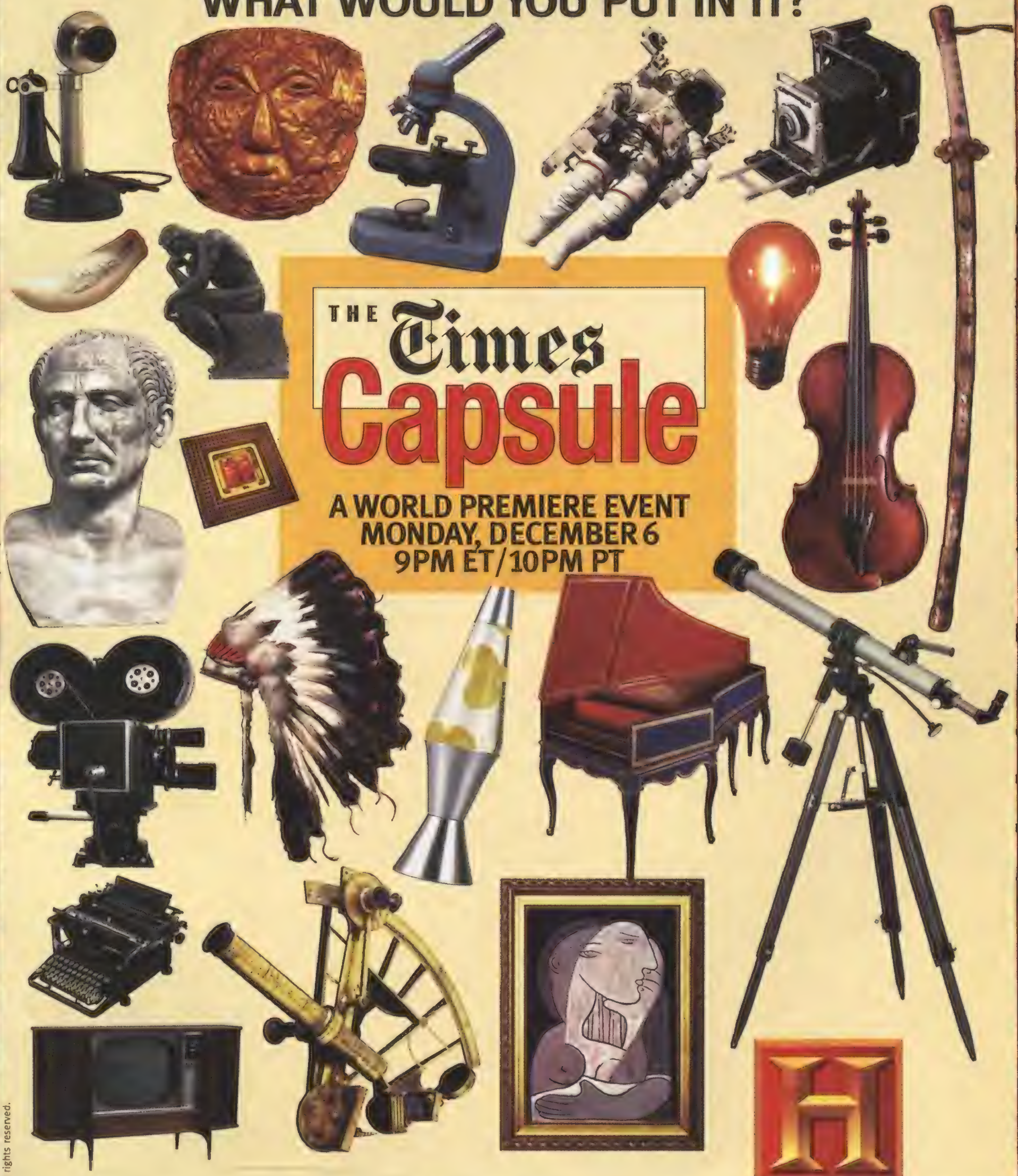

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BY RICHARD CONNIFF

BEING A MEMBER OF THE BRITISH ARISTOCRACY THESE DAYS ISN'T EXACTLY A DOG'S LIFE, BUT IT'S NO BED OF ROSES

OVER BUTTER-SOAKED TEA CAKES IN A wood-paneled dining room at the House of Lords, Baroness Strange was telling me about the imminent demise of her social class. It was a bit like talking about guillotines, over brioche, in revolutionary France. Lady Strange and almost all of Britain's hereditary peerage were about to be evicted from the second chamber of Parliament, which their families had occupied by birthright, some of them for more than 600 years. It would be a bloodless revolution. The peers themselves were debating the terms of their exit that afternoon, in characteristically genteel language.

"You Americans look at everything horizontally, in terms of space," Lady Strange was saying, between sips of China tea. "We look at things vertically, in terms of time. We talk about what happened 100 years ago or 1,000 years ago, in a sort of chronological order." She proceeded to demonstrate by way of her own family history. It was chockfull of beheadings and noble last words. It stretched across the 372 years in which the Stranges have sat on the red leather benches in the House of Lords, and from there it branched out into the distant recesses of European history.

Lady Strange, a warm, formidable woman of 70, in a green velvet jacket (with a small tear stitched up) and ruffled cuffs (slightly worn), was a stout defender of aristocracy: "It's not the title. What I'm saying is that it's the hereditary influences that will come out. If your ancestors were the sort of people who did the sort of things that got them made peers, the chances are those genes will get carried on." Evicting those genes from the House of Lords, she said, amounted to "hereditary cleansing."

We finished our tea and queued up at the cash register to pay the bill before returning to the debate. "Fascinating place, isn't it?" she remarked, as if she were only a visitor here herself. Over a shoulder she noticed a full-length por-

The 16th Baroness Strange, facing eviction from the House of Lords, enjoys her garden.

PHOTOGRAPHS BY THEO WESTENBERGER

Editor Charles Mosley reflects over the latest edition of *Burke's Peerage*.

trait of King Henry VII. "My ancestor," she said.

By coincidence, that afternoon was also the publication date of a book almost as charming and anachronistic as the House of Lords itself. *Burke's Peerage & Baronetage*, a record of the noble and ignoble ancestors of the British aristocracy, was making its first appearance in 29 years.

The new book, the 106th edition of *Burke's* since its founding in 1826, was produced by a team of 15 editors at a cost of $1.2 million. "It has more words than the Bible," the publisher boasted, to which his chief editor immediately added, "I would point out that the genealogies are also more reliable than Shem begat Mo." The two-volume set weighs in at 16 pounds, lists 2,300 families and sells for $395. With an expected print run of 4,000 copies, it adds up to a considerable labor of love.

Burke's is only one in a current spate of such guides to the aristocracy, for which love seems to be the only plausible explanation, given that the aristocracy itself is sinking ever deeper into irrelevance and sometimes insolvency. How else, except by some innate human craving for hierarchy, to explain the reappearance of the *Almanach de Gotha*, a handbook of European royalty, recently published for the first time in more than 50

You do not have to read British newspapers for more than a day or two to sense that hostility toward hereditary privilege is a seething undercurrent.

years? Or the new edition of *Debrett's Peerage & Baronetage*, a one-volume guide to the living British nobility, due out in January? A new volume has also lately appeared to update *The Complete Peerage*, an authoritative 14-volume historical work first published in 1911. At the other end of the scholarly spectrum, an ex-newspaperman named Smith is auctioning off dubious titles for huge sums and offering to put the buyers in a planned *Smith's Peerage*, with the straightforward promise: "We'll print whatever they send us."

Burke's Peerage is clearly the pick of this litter. It is also an institution, a guide to what was once the most successful and cohesive social hierarchy on earth. Until about a century ago, the British aristocracy managed to concentrate an entire empire's wealth, status, political power and land in several hundred families—almost all of them listed in *Burke's Peerage*. Along with their stately homes and the ancestral portraits on their dining room walls, *Burke's* was a means of sustaining what one historian has called their "collective awareness of inherited and unworked-for superiority." *Burke's* was their reference work for weeding out fakes and keeping up with "noble kinsmen" (a term still used in the House of Lords, where almost everyone was once everyone else's cousin). It was also their studbook for marrying well (meaning to one another). In Oscar Wilde's 1893 play *A Woman of No Importance*, Lord Illingworth describes "the Peerage" as the "one book a young man about town should know thoroughly." He also calls it "the best thing in fiction the English have ever done."

To modern minds, *Burke's* might also seem like the ultimate book of Dead White European Males. Inevitably, it embodies one of the most politically incorrect ideas of our time. You do not have to read British newspapers for more than a day or two to sense that hostility toward hereditary privilege is a seething undercurrent in national life.

One recent speaker in the House of Commons put it in distinctly ungenteel terms: "How can the Duke of Buccleuch . . . who owes his title to the fact that one of his ancestors was the bastard son of King Charles II, represent the common man?" Another speaker, her upper lip curled "like a slice of old toast," in the words of a conservative newspaper, shuddered to remind her listeners that many peerages had been obtained in the first place for "dubious favors, sometimes sexual, sometimes financial, performed for past monarchs."

And yet as an American (an Irish-American, at that), I must confess that *Burke's* has the irresistible appeal of buttered popcorn, well salted. I found myself browsing through it the way I meander through the *Oxford English Dictionary*, in search of excellent, if utterly useless, information. For instance: Algernon, that quintessentially English name, actually derives from a medieval French term for facial hair, *als gernons;* it crossed the English Channel around the time of the Norman Conquest on the handlebars of someone known as "William with the Whiskers." The O'Neills, who are the oldest family in the book, once produced a high king of Ireland named Aedh Macaemh Toinleasg, which *Burke's* helpfully translates as "the Lazy-arsed Youth." And the Honourable Pandora Beatrice Ormsby-Gore, daughter of the 5th Baron Harlech, is currently expressing her hereditary influences as "bass guitarist of the all-girl punk band 'Fluffy.'"

What's in these pages is, of course, more than mere popcorn. "It's a history book made up of families," said one expert in genealogy. "That's what a country is, a group of families striving away. There are people in history who have done important things, risky things. They could have gotten killed. Instead, they got titles."

Often, to judge from *Burke's*, they got both. An entry about the earldom of Caithness begins "William, of Mey; *dvp* unm (strangled by his bro the Master). . . . " The abbreviations stand for *decessit vita patris* (died in his father's lifetime), "unmarried" and at the hand of his own brother. This mix of the cryptic and the titillating is typical, often with some exotic tribal custom tossed in as a bonus: "Robert Crichton, 8th Lord Crichton of Sanquhar; b c 1568; RC; lost an eye . . . in a bout with a fencing master, John Turner . . . plotted Turner's murder for seven years, effecting it through the agency of one Carlyle. . . . Carlyle and several other accomplices were hanged by a hemp rope but the 8th Lord was granted a peer's privilege of being hanged by a silk one. . . . "

Burke's can seem inscrutable to benighted colonials like me because we tend not to know that the peerage consists of five ranks (dukes at the top, followed by marquesses, earls, viscounts and barons, very much in that order), or that, since 1958, it has also included peers appointed to serve only for their own lifetimes, in recognition of achievement. There are now about 500 of these so-called life peers, ranging from former prime minister Margaret Thatcher to the Right Honourable Lord Ian McColl of Dulwich, author of *Intestinal Absorption in Man*, and they will remain in the House of Lords after most of the 700 or so hereditary peers are gone. This is a sore point for hereditary peers, who

Kings and aristocrats produced enough children "on the wrong side of the blanket" to make them the potential fathers of the nation.

used to refer to the lifers as "dayboys."

Outsiders may also be discouraged from casual reading of *Burke's* by the convoluted nature of aristocratic breeding. Titled families have a bewildering knack for intermarrying with other titled families and banging surnames together with a hyphen, or simply switching to new surnames as they inherit new titles, sometimes three or four in a lifetime. The one-name-to-a-person idea has somehow eluded them. The Duke of Bedford, for instance, is also Marquess of Tavistock, Earl of Bedford, Baron Russell, Baron Russell of Thornhaugh, and Baron Howland of Streatham. But his real name is John Robert Russell, though his friends all call him Ian.

A final complication is the delicate matter of the numbering of titleholders. It is a point of pride and precedence that the current Lord Hastings is the 22nd in a line reaching back to 1295. On the other hand, it can be an occasion for an exchange of pained letters when a 13th marquess turns out in fact to have been only the 8th, because somebody at *Burke's* concluded that the marquesses during several centuries when the family was "attainted," or under royal disfavor, don't count. In one case, early in World War II, a bomb fell on London and killed the 1st Baron Stamp and his eldest son. Soon after, with the bombs still falling and the fate of Europe uncertain, a committee of the House of Lords held a hearing to determine whether Baron Stamp had died first, leaving his eldest son to become the 2nd Baron Stamp for the millisecond or two before he also died, and thus allowing a younger son who survived to inherit the title as the 3rd Baron Stamp.

"The closer you look, the more confusing it gets," Charles Mosley admitted cheerfully when we met in London on the day *Burke's* was published, and I took some comfort in that, as Mosley is the editor of *Burke's*. He was positioning *Burke's* in its traditional role as a handbook of the elite, "the people who have made England what it is today," and also, more democratically, as a useful tool for the "fast-expanding family history business." Half of Europe descends from Charlemagne, he said, and much of the population of the British Isles, the United States and other former colonies presumably also has roots in the aristocracy. For instance, he noted, Malcolm Wallop, the former U.S. senator from Big Horn, Wyoming, is "about eight heartbeats away from the earldom of Portsmouth." He picked up his copy of *Burke's* and said, "I'll tell you exactly how many heartbeats he is . . . there are eight male heirs between him and the earldom. It's not impossible. If you've ever seen the movie *Kind Hearts and Coronets*, about a fellow murdering his way to a dukedom . . . "

A look through *Burke's* suggests that descent from kings is also far more common than people who pride themselves on it might like to think. Edward III, who reigned in the 14th century, had 13 legitimate (and 4 illegitimate) children, giving him roughly two million descendants in modern Britain. Descent from King Henry I, who reigned in the 12th century and fathered 25 illegitimate children, is even likelier.

Other kings and aristocrats also produced enough children "on the wrong side of the blanket" to make them the potential fathers of their nation—and this edition of *Burke's* attempts to list these illegitimate offspring for the first time. According to Mosley, the practice of giving birth outside wedlock has become too common for *Burke's* to ignore. But adding these offspring also has the inadvertently democratic effect of opening up new genealogical lines into the peerage. For instance, among many other names, James Smithson, founder and namesake of the Smithsonian Institution, turns up in *Burke's* for the first time, as an illegitimate son of the Duke of Northumberland. For that matter, the entire royal lineage stems from William the Conqueror, also known as William the Bastard, who was, according to *Burke's*, the "product of a dalliance unsolemnised by the Church between a tanner's daughter and a reigning duke."

Making *Burke's* more democratic and egalitarian is, of course, the opposite of its original intent, which was to make the aristocracy seem more exclusive. John Burke, an Irish genealogist, produced the first *Burke's Peerage* in 1826. He then went on to produce a separate volume called *Burke's Landed Gentry*, which catalogued untitled but land-rich country squires. Between the aristocrats and this territorial squirearchy, fewer than 5,000 people owned three-quarters of the United Kingdom. Thus Burke's two books became the standard reference to "almost anybody who was anybody in the British Isles."

But it was Burke's son, Bernard, who made *Burke's* an institution. Bernard pleased his readers by combining good credentials—as Ulster King of Arms he was an arbiter of family heraldry—with an almost total indifference to truth. He was happy to publish any wild tale a family cooked up to establish its ancient roots. On the theory that the oldest lineage was by definition the noblest, some families borrowed not just the surname but the entire lineage of

Researcher Roger Powell employs a magnifying glass to peruse a pedigree chart.

an unrelated family. Others erected stained glass windows, monuments and, in one case, an "ancient" family chapel containing fraudulent names and dates for filling in gaps in their genealogy. Burke accepted it all, producing a book in which, as one historian summarized it: "Impossible men with impossible names . . . do impossible acts in impossible places at impossible times."

One of the most brazen of these attempts to establish vintage was perpetrated by the Feildings, who rose from country gentry to the earldom of Denbigh through a good marriage in the 1600s. The Feildings (or Feldens) subsequently revealed the happy news that they were, in fact, descended, by way of Rheinfelden, Germany, from the imperial House of Hapsburg. Unfortunately for the Feildings, a genealogist named J. Horace Round was making his career in the late 19th century exposing what he described as "evil work," "gross usurpation," "audacious concoction" and "absurd fiction" in *Burke's Peerage*. Round demonstrated none too gently that the Hapsburg connection was based on a "pack of forgeries." Nowadays the Feildings are said to refer to themselves as "Perhapsburgs."

The Churchills, whose 20th-century descendants were to include Sir Winston Churchill and Diana, Princess of Wales, also came to grief at the hands of Round. Their most celebrated forebear was John Churchill, the 18th-century general who won brilliant victories over the French at Blenheim, Oudenarde and Ramillies. But the

Robert Smith, a purveyor of feudal titles, is happy to accept a credit card.

Churchills felt obliged to drive their roots deeper into history in the person of Sir Bartholomew de Chirchil, who supposedly held the castle of Bristol for King Stephen in the 12th century, and died fighting in his cause. Round gleefully revealed that this was a fiction, pointing out that the castle of Bristol had been held not by King Stephen but by his enemies, and concluded that the actual ancestry of the Churchills had been "singularly undistinguished."

Burke's now reads as if it had been edited by Round himself. It tells us not merely which dukedoms originated with bastard children of Charles II, for instance, but also that the earldom of Castlemaine was given to the husband of one of Charles II's mistresses as "an obvious sop to a cuckold to look the other way." We learn that the 1st Earl of Macclesfield, a 17th-century general, failed to report the deaths of his soldiers so he could collect their pay. And of Sir Edward George Earle Bulwer-Lytton, *Burke's* reports that he was the author of *The Last Days of Pompeii* "and other fictions, not least the account he used to give of his own ancestry."

None of which discourages outsiders from trying to get into *Burke's*. One day near the British Museum I met up with a freelance historical researcher named Roger Powell, who was carrying a briefcase full of yellowing family trees, which he laid out on the table at a local coffee shop. Each sheaf of papers represented a title that is currently unclaimed. Powell, who was one of the senior editors

A catalogue featuring knights jousting on the cover offered to sell such titles as the lordship of Wooton Wawen Priory and the Barony of Knockninny.

of the new *Burke's*, now makes his living in part by figuring out who has a right to those titles.

Powell unfolded the family tree of one baronetcy that has been vacant since 1774. A wealthy British client has commissioned him to prove his claim to the title. But with his index finger, Powell traced his way down to a branch in the family, senior to his client's, which emigrated from England to America. "If we can kill off that American branch, then my client is the next baronet," said Powell, sounding alarmingly like a character in *Kind Hearts and Coronets*.

This kind of research can be tedious and slow. Powell typically charges about $3,500 for the preliminary work, then lays out his findings to see if the client wants to take it any further. "Often, if you tell the truth and the prognosis is bad, they still want to carry on," said Powell. "You get hooked on the chase rather than the actual results." The possibility of disappointment is great, as anyone who has ever taken a close look at his own family can readily imagine. In one case, an Austrian baron hired Powell to trace his ancestry back to a vacant Irish viscountcy. But Powell discovered that the client's ancestor had in fact taken the title by fraud in the 1750s. "It blew his pedigree to pieces," said Powell, "and he dropped me like a hot brick."

There is of course an easier way to get a title: "When I want a peerage," a newspaper magnate once said, "I shall buy it like an honest man." With that in mind, I caught the underground one morning to Lambeth, an unfashionable neighborhood south of the Thames, and walked to a nondescript brick row house up the road from the Imperial War Museum. An assistant escorted me to an upstairs sitting room appointed with antique knicknacks and an oil portrait of some aristocratic sort in a ruffed collar. After a few minutes, a small man in a dark-blue shirt and gold tie came in and introduced himself as Robert Smith, chairman of the Manorial Society of Great Britain. He had slicked-back hair, small glossy eyes and a mustache that looked like a thin smear of magnetic filings. The row house is his home, which he uses as headquarters for the Manorial Society and also for his business selling feudal titles. "I live over the shop," he joked, "as the Duke of Edinburgh said a few years ago about Buckingham Palace."

Smith presented me with a catalogue featuring knights jousting on the cover and, inside, an offer to sell such titles as the lordship of Wooton Wawen Priory and the Barony of Knockninny. The lordships were typically selling for about $14,000, he told me, and the baronies for upwards of $40,000. "These aren't peerages," he volunteered. "That must be understood." Peerage titles derive from the Crown and can be transferred only according to strict rules of inheritance. What Smith was selling were "just feudal titles" associated with old landholdings, good for nothing more than "a bit of history and a bit of fun." I asked if the genuine nobility didn't object to this trade in titles. "It's the nobility who are selling them," said Smith, who earns a 25 percent commission. "The titles used to pass to the new owner on the sale of the land, like light fixtures in a house." But a change in the law separated the titles from the land, and while the aristocracy continued to sell off its land, there wasn't any market for the titles, until Smith came along. Among other recent sales, he had helped the 9th Earl Spencer, Diana's brother, get rid of the title Lordship of Wimbledon for almost $300,000.

Anticipating my next question, Smith said his buyers "are often self-made businessmen, who are also far from stupid." They have included Peter Norton, developer of Norton Utilities computer software, who paid $190,000 for the lordship of the Manor of Stratford-on-Avon ("It had a certain resonance," said Smith); the conductor and composer André Previn, who bought an Irish feudal barony; and Ole Georg, who composed music for *Baywatch* and is now known as Lord of the Manor of Sheldowne in Sussex.

Buying prestigious-sounding titles for cash is no different, Smith said, from what the peerage itself had done to acquire its titles. "The original Lord Spencer was created a lord because he gave a lot of money to George Villiers, who was King James I's favorite, the Duke of Buckingham. He had quite a racket in selling earldoms and baronetcies. Other people lent money to the king and didn't ask for it back and then magically became dukes. They all one way or another bought their titles." But if past kings often sold peerages, even J. Horace Round argued that at least they sold them to people who were worthy to receive them.

When I talked with *Burke's* editor, Charles Mosley, about this, he suggested that aristocratic titles merely tended to make the recipients become worthy. The honors system, in his utterly pragmatic view, has always been a tool for social control. In wartime, the prospect of a viscountcy inspired soldiers to heroic deeds. In peace, the possibility of becoming a real baron makes mere robber barons less rapacious. With a title, you could "tame these great beasts," Mosley argued, and

"One family is really as old as another. . . . The only difference is that the 'old' family thinks it knows who its forebears were at a particular time."

induce them to practice "that very British quality—understatement."

Or sometimes not. Near the end of my trip, I went to visit Alexander Thynn, the 7th Marquess of Bath, at Longleat, his family's 100-plus-room Elizabethan country house. Lord Bath is a flamboyant character, caught somewhere between the 1660s and the 1960s, and not quite ready to let either one go. He is 67, with wild gray hair swept round to the side in pirate fashion. His eyes are big and blue, with a quality of continual delight, and he has a lumbering boyishness in his stride. He dresses in loose caftans and braided jackets, and he keeps workmen busy painting the Elizabethan plasterwork in his private apartment purple, yellow and red.

Lord Bath, who is listed not just in *Burke's* but also in that modern handbook of status, the *Sunday Times Rich List* of Britain's 1,000 wealthiest, gets his income largely from the leisure industry. Longleat is open to the public and attracts more than 400,000 visitors a year. The exhibitions there include one called "Family Bygones," displaying artifacts from a time when leisure had other meanings for the marquesses of Bath. It includes holster flasks (for a quick nip in the middle of a fox hunt), a tiddlywinks game, overshoes for horses (to keep them from damaging the lawn) and a footman's tray. Lord Bath puts his title in roughly the same category as a theme-park showpiece.

He prefers to think of himself as Alexander Thynn, painter and author. He took me on a tour of his work, room after room of gaudy murals depicting scenes from his life and from the *Kama Sutra*, often overlapping. A spiral staircase was lined with his three-dimensional portraits "of the severed heads of every woman I have ever loved," identified in the aristocratic manner not by name but by number, one to 70. And in the hallways and the banquet hall he had hung his portraits, in sawdust and oil, of more than 150 ancestors, some of them framed with purple neon lights. "The earliest one is Tacitus, in 55 A.D." he said. "In the corner there." He went bounding past Charlemagne, Harold, Alfred and, on the men's room wall, Ethelred the Unready. "That crowd is largely Pembrokes and Borontsovs—they're Russian," he said, "and this lot are Norfolks and Marlboroughs. And there . . . well, it's not worth telling them all."

The conversation turned to another venerable old soul who showed up a few years ago, not in Lord Bath's family tree but in a cave on his property. "Cheddar Man," who died 9,000 years ago, is the oldest known complete human skeleton in the British Isles. Researchers have taken DNA samples from the skeleton and from local people, to sort out how they might be related. Lord Bath speculated that in the future, *Burke's* might be supplanted by genealogical books "much more from a clan point of view—about what gene pools existed in a given county." With improvements in genetic technique, he said, it might even lead "to the possibility of discovering that I'm not a Thynn at all."

He said he'd given a cell sample for the Cheddar Man DNA study, with results that seemed to delight him. "In Her Majesty's prisons, they take DNA from some very terrible criminals, and mine is identical to one of them."

Meanwhile, Lord Bath's butler, Cuthbert Varrett, had joined us. He was dressed not in livery but in a comfortable cardigan, and the two of them talked as something like equals. It developed that Varrett, whose family comes from Scotland, had also given a sample for the Cheddar Man study. His DNA turned out to be from one of the most ancient groups known in Europe.

It made me think of something an old critic of *Burke's* once wrote: "People who talk about old families sometimes forget the obvious fact that one family is really as old as another. . . . The only difference is that the 'old' family knows, or thinks that it knows, who its forefathers were at a particular time."

I said goodbye to Lord Bath and departed wondering at how many of those old certainties have already fallen away. We live, as an eminent Englishman once put it, in a "mixed up, muddled up, shook up world." Lords now turn up if not as butlers then as municipal gardeners, bus conductors (family motto "Late, but in Earnest"), deli workers, police constables, silage-pit builders and bingo callers. The *Times*, for instance, recently described former prime minister John Major as the son "of a circus trapeze-artist turned music-hall actor and garden gnome manufacturer." It made our own log-cabin-to-White-House tradition look pale. I went home to browse through the new *Burke's* with a sense that it was the most honest account of the aristocracy ever given, and the most enjoyable. But I was also pretty sure that it would be the last of an eminent line.

Richard Conniff is the author of Every Creeping Thing *(Holt). New Yorker Theo Westenberger's photographs of wacky musical instruments appeared in April.*

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Picturing the America

By Helen Dudar

IN THE SPRING, A TICKET to New York's Whitney Museum of American Art cordially invited the visitor to "Make Some Sense of America." Given the context—a dizzying two-installment extravaganza encompassing more than 1,200 works of art (paintings, sculpture, crafts, photography, film, video, dance, literature, architecture, pop music)—it might have been more helpful to have been told to move slowly and stay calm.

The Whitney's show, "The American Century," embraces the art and culture of our time. The first half of the century was explored in the spring-summer exhibition that carried the "Make Some Sense" slogan; the second phase, open now, will be on display through February 13, 2000. The monster show has something for everyone, even the visitor who might pass up a Dan Flavin fluorescent light work or a Joseph Cornell box for a chance to cozy up to a computer. One room has been devoted to a cluster of PCs equipped with a Website on the exhibition, an amenity provided by the Intel Corporation, the major money behind the show.

The critical response to the Whitney's efforts has ranged from warm, grateful approval to irritation bordering on outrage. Moreover, not every viewer was charmed by a glimpse of Humphrey Bogart as Sam Spade in *The Maltese Falcon* or giant images of loose-limbed tap dancers from a 1920s film projected on a gallery wall. But surely no rule demands that viewers appreciate, or even pause, before every element of a multimedia event: just the history of American art ranging across the decades was enough to command attention and gratitude. And attention was paid. Long lines of visitors eager to purchase tickets stretched far along the sidewalk outside the museum.

The first phase, covering 1900-1950, was, among other things, a reminder of how rel-

A SWEEPING EXHIBITION AT THE WHITNEY MUSEUM VIEWS THE 20TH CENTURY THROUGH THE EYES OF OUR NATION'S ARTISTS

atively little interest was invested in American art in the time of Gertrude Vanderbilt Whitney, the museum's founder. Whitney was a sculptor herself, a woman of taste and means who fervently supported American artists. But in her day, the gentry put its money into European works. So did the Metropolitan Museum of Art, which, in 1929, famously refused her collection. The Whitney Museum opened two years later.

Much of its art appears in the show, along with works borrowed from collections everywhere. The walls alternate the familiar with the forgotten. Some of it is engaging art that an older generation first encountered: John Sloan's snowy Greenwich Village backyard with prowling cats; Elie Nadelman's memorable carved-wood sculpture of a couple dancing the tango; George Bellows' muscled prizefighters; Edward Hopper's melancholy urban scenes; Grant Wood's iconic *American Gothic*. There are surprises—early abstracts by Georgia O'Keeffe, the painter we associate chiefly with giant images of flowers; harsh reminders of the devastation of the Depression and the Second World War—and, inevitably, a parade of names now faded into obscurity.

The second part of "The American Century" heralds an age of glory. The States, long a provincial outpost of European creativity, was suddenly mainstream. While Europe painfully emerged from the ravages of World War II, America was intact and thriving. The political upheavals that precipitated the war also bestowed gifts. Refugee artists and writers who had fled Europe—among them, Fernand Léger, Piet Mondrian, Walter Gropius, Salvador Dalí, André Breton and Marc Chagall—made a major impact on the way American artists worked.

New York was now the home of an avant-garde group of artists labeled the New York School and dominated by Abstract Expressionism, and it wiped out Paris as the capital of the art world. In truth, nonobjective art had already made its mark even before the half-century arrived. The final galleries of the first phase of the Whitney show proclaimed the emergence of a new art with pioneering works by, among others, Jackson Pollock, Willem de Kooning, Franz Kline, Mark Rothko, David Smith and Theodore Roszak.

In the new art, size mattered. A Pollock painting might want a wall extending beyond 17 feet. As Rothko saw it, such monumentality allowed

Century

the artist to be "very intimate and human"—to be inside his work. Gesture painters labored spontaneously, as the catalogue tells us, "dripping, pouring, slashing." Pollock's work, for example, bore "a trace of a process, a performance, a dance."

Dominant styles seemed to change every five minutes. Figurative painting regained momentum before the 1950s were over, and we had Alex Katz, Larry Rivers and Alice Neel—a woman! The art world finally gave room and respect to female creative talents; along with Neel, connoisseurs welcomed Louise Nevelson, Elaine de Kooning, Helen Frankenthaler and Louise Bourgeois. In prosperous times, there was money to buy the work of either sex and an astonishing number of places in which to find it. By 1960, New York's 30 respected galleries had ballooned to 300. Contemporary art was big business.

It got even bigger with the arrival of Pop Art, disdained by the critics but embraced by start-up collectors. Its progenitors were Robert Rauschenberg, whose work boldly combined painting and sculpture, and Jasper Johns, who could make a major statement out of a triple image of the American flag—the emblem of the exhibition. Following in their tracks were Andy Warhol, Roy Lichtenstein and Claes Oldenburg, all of whom made art out of everyday images.

In time, some art became at once

transient and memorable. Christo wrapped buildings and landscapes in great sheets of fabric, creating huge outdoor works that were, of course, temporary. Robert Smithson made "Earthworks" in vast empty spaces, using rock, earth and water. This was art seemingly without commercial prospects, "pieces" that could not be shown in a museum or home and sometimes might disappear entirely. The final irony is that they could be crafted only with substantial funds, and patronage became critical.

In the late decades of this century, art has been complicated, unnerving and sometimes simply fun. One of the more recent pieces in the show is a 1997 interactive installation by Bill Viola, the video artist. Titled *Tree of Knowledge*, it consists of a long enclosed corridor at the end of which the viewer sees a tree. Walk toward it and the leaves fall off. Step back and they return to the branches. In this collaborative process, the viewer—metaphorically at least—joins with the creator to complete a work of art.

We can't set off flurries of flying leaves on the printed page, but the section that follows offers a sampling of the range and variety of paintings and sculpture produced in this country over the past 99 years.

Jasper Johns turned an American icon into art in *Three Flags*, 1958 (far left). Grant Wood created his own icon with *American Gothic*, 1930 (above). Nam June Paik used a different kind of iconic image—multiple TV sets—for *Fin de Siecle II*, 1989 (detail, left).

1900-1919

Everything moves at high speed in our times. One of the surprises of the Whitney survey is the nearly simultaneous sunset and dawn of old and new ways of representing life. In a few steps, a visitor can move from paintings reminiscent of John Singer Sargent's elegant portraits to works inspired by the earliest French plunge into Futurism. Thus, we have Cecilia Beaux's conventionally pretty portrait of a fine lady and, only 15 years later, Max Weber's boldly sculpted abstract evocation of rhythmic movement. A major influence in his day, urban realist Robert Henri, leader of the Ashcan School, preached that art must reflect the spirit and energy of the age. In his painterly portrait of Gertrude Vanderbilt Whitney, he captured the stylish independence and sophisticated bohemianism of the museum's founder. John Sloan, a Henri disciple, recorded fleeting moments in everyday urban life with a certain voyeuristic detachment; here, for instance, a group of men enjoy friendship and a pint in a neighborhood bar. There are unexpected traces of Impressionism in Jonas Lie's c. 1915 painting of New York's East River. But the serenity and soft, melting colors of the Monet palette are absent. Instead, we have fast boats, bursts of steam and the bustle of life on a major waterway of a dynamic city. Three years earlier, Arthur Dove, one of the artists encouraged by the great Alfred Stieglitz, turned out what may have seemed, to some, a puzzling work. Powerfully influenced by Stieglitz's exhibitions of modernist art, Dove reduced his rendering of plants to a lyrical abstraction of vegetal forms. Sculptor Elie Nadelman, a Polish immigrant, collected American folk art and made his own engaging versions, including the c. 1919 genre piece *Tango*.

1 John Sloan, *McSorley's Bar*, 1912; **2** Elie Nadelman, *Tango*, c. 1919; **3** Robert Henri, *Gertrude Vanderbilt Whitney*, 1916; **4** Jonas Lie, *Path of Gold*, c. 1915; **5** Cecilia Beaux, *Mrs. Larz Anderson (Isabel Weld Perkins)*, 1900-1901; **6** Arthur G. Dove, *Plant Forms*, c. 1912; **7** Max Weber, *Spiral Rhythm*, 1915 (enlarged and cast 1958-1959)

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FOR CREDIT INFORMATION, SEE PAGE 150

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1920-1939

Among the trends of the Jazz Age that followed World War I was a passion for modern technology. To the Italian-born Joseph Stella, the soaring Brooklyn Bridge was not just an object of beauty, it represented a "new divinity," and he celebrated it in fractured perspective and magical threads of line and color. Edward Hopper's view of contemporary urban life, however, was far from celebratory. In painting after painting, Hopper enshrined the loneliness and isolation of the big city. His people sit alone or sit together, separated by unbridgeable distances that mirror their alienation. Hopper classmate Rockwell Kent was one of a number of artists for whom nature embodied the sublime. His painting *The Trapper* is less about a man carrying a couple of dead animals than about an empty stretch of land transformed into mysterious, pared-down shapes. Ashcan artist George Bellows embraced the realism of city life and, occasionally, the rituals of boxing. His depiction of the famous Dempsey and Firpo match of 1923 evokes a sense of excitement and immediacy by casting the viewer as a spectator looking on as Dempsey is pushed back into the ring. Charles Sheeler, who was also a commercial photographer, painted under the label of Precisionism. The flattened perspective of his patterned *Interior*, a collection of objects and furniture in his Pennsylvania farmhouse, recalls his interest in Cubist Expressionism. Georgia O'Keeffe's single, monumental blossoms seem intensely personal and unsparingly erotic, but she always insisted her interest was the close-up view of a flower. There was no mistaking French-born sculptor Gaston Lachaise's interests. In *Standing Woman* he celebrates the power, the majesty and the sexuality of women.

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1 Joseph Stella, *The Brooklyn Bridge: Variation on an Old Theme*, 1939; **2** Rockwell Kent, *The Trapper*, 1921; **3** George Bellows, *Dempsey and Firpo*, 1924; **4** Gaston Lachaise, *Standing Woman*, 1912-1927; **5** Georgia O'Keeffe, *The White Calico Flower*, 1931; **6** Charles Sheeler, *Interior*, 1926; **7** Edward Hopper, *Chop Suey*, 1929

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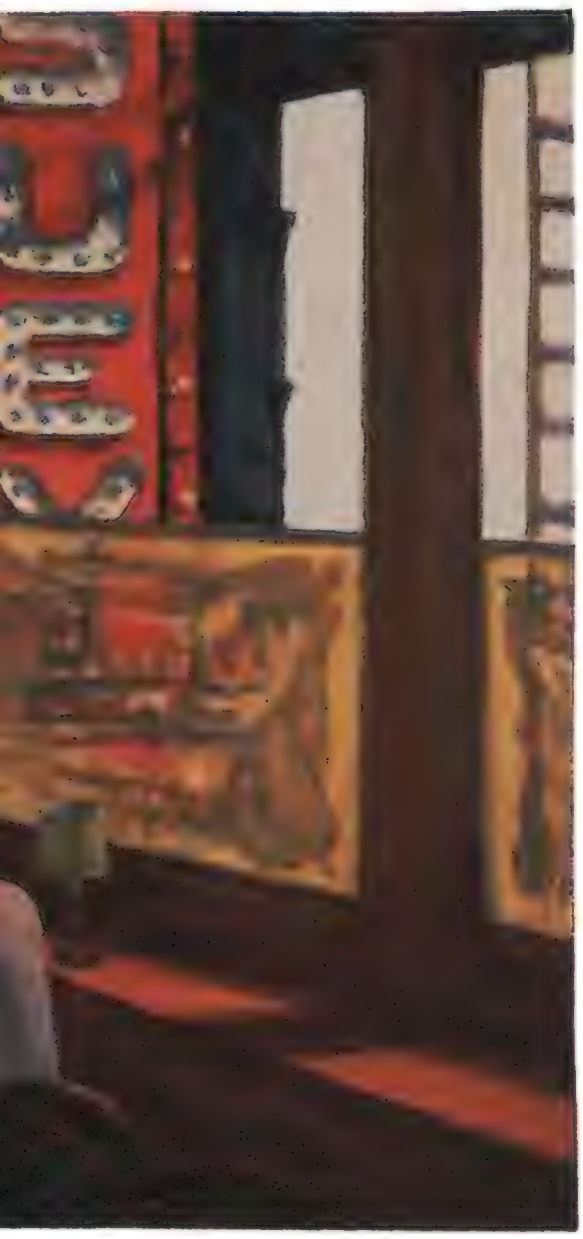

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1940-1959

William H. Johnson's wittily cartoonish image of a "café" moment is a reminder that fame in the art world can be evanescent. Nearly 60 years ago, Johnson was a stellar figure in the Harlem art scene, noted for his folkloric images of black urban life. Disease ended his career; forgotten, he spent the last decades of his life in a mental institution. Simplification and wit also play a part in Figurative Expressionist Alex Katz's twinned wooden cutouts of his wife, Ada. Katz's often large-scale works seem deceptively benign. Willem de Kooning's imagery, on the other hand, charges at us; he is the Action Painter who fashions fragmented figures out of slashed lines and stabbed color. His *Woman and Bicycle* depicts a confrontational creature with a massive chest and ravenous smile. Calm descends with the Kenneth Noland target he calls *Song*, and with the vaporous streaks of color in Morris Louis' *Iris*. In the '50s, each embraced Color Field painting; thinned paint poured or brushed directly onto unprimed canvas sinks into the material, creating a translucent effect. What Gertrude Greene sought, with fellow Geometric Abstractionists, was a serene purity achieved by ignoring life, narrative and three dimensions. In the '40s, William Baziotes began to incorporate Surrealist methods in his work, creating biomorphic images of turmoil and deformity. In the words of Barbara Haskell, curator of the first show, Baziotes and his fellow believers hoped to "express the terror and insecurity of contemporary existence." What the amazing, prolific Robert Rauschenberg believed in was art made real by the use of real objects. He stunned the art world with assemblages that included newspaper pages, a quilt and, yes, as seen at right, a jaunty stuffed hen.

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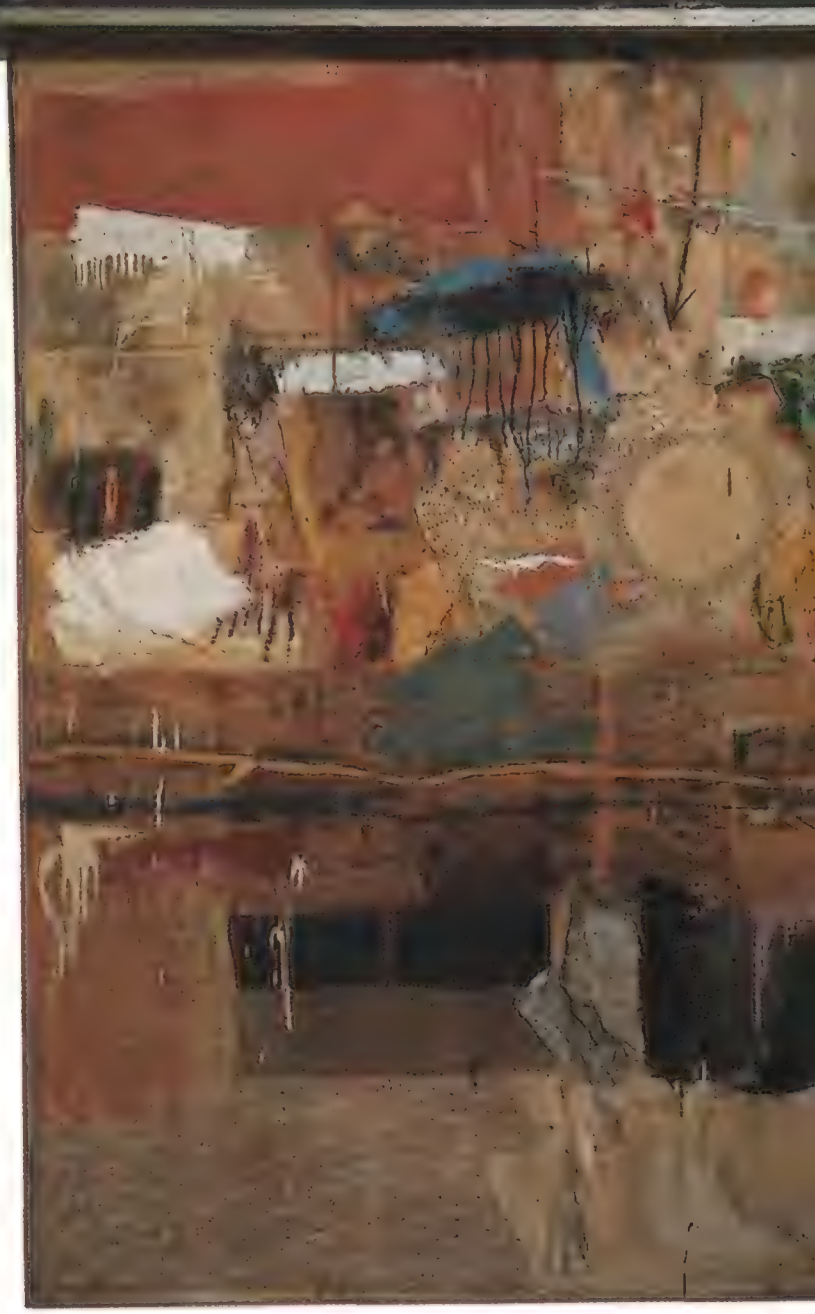

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1 Robert Rauschenberg, *Satellite*, 1955; **2** William H. Johnson, *Café*, c. 1939-1940; **3** Alex Katz, *Ada, Ada*, 1959; **4** Gertrude Greene, *Space Construction*, 1942; **5** Willem de Kooning, *Woman and Bicycle*, 1952-1953; **6** Kenneth Noland, *Song*, 1958; **7** Morris Louis, *Iris*, 1954; **8** William Baziotes, *Dwarf*, 1947

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1960-1979

In the early '60s, Pop Art, embracing the techniques and imagery of commercial art, became for some years America's reigning vanguard movement. Roy Lichtenstein made comic strips and Benday dots his personal imagery; in *Blam*, an immense picture of a warplane taking a hit, he produced what Lisa Phillips, curator of the second show, terms a "dynamic war cartoon." Possibly no one exploited popular imagery as vividly or as shrewdly as Andy Warhol. Anything was fruit for his art: Brillo boxes, Coca-Cola bottles and, as we see here, the icon of early rock 'n' roll, Elvis Presley, in the artist's signature multiple images. With the rise of the new feminist movement, some women returned to aspects of their daily lives—crafts, domestic activities—as subjects for art. Miriam Schapiro, who helped organize the Feminist Art Program at the California Institute of the Arts, used a dollhouse idiom with fellow artist Sherry Brody to give voice to women's faith, fears and fantasies. Ultrarealism flourished through the late '60s and early '70s. Walking through the Whitney show, a visitor glancing too quickly at Duane Hanson's encumbered old lady found herself wondering why that woman didn't check those bags downstairs. And Robert Bechtle's vision of a young family proudly posed before their '61 Pontiac looks so much like a giant photograph that curious viewers felt compelled to inspect the canvas to verify that it held brush marks. In contrast, Philip Pearlstein's nude, arrayed on an Oriental rug and reflected so artfully in the mirror, seems more like an object than a breathing creature. A decade later Susan Rothenberg was doing monochromatic paintings of horses that looked unnervingly like ghosts.

1 Robert Bechtle, *'61 Pontiac*, 1968-1969; **2** Susan Rothenberg, *For the Light*, 1978-1979; **3** Miriam Schapiro, with Sherry Brody, *The Doll House*, 1972; **4** Andy Warhol, *Elvis I and II*, 1964; **5** Philip Pearlstein, *Female Model on Oriental Rug with Mirror*, 1968; **6** Duane Hanson, *Lady with Shopping Bags*, 1972; **7** Roy Lichtenstein, *Blam*, 1962

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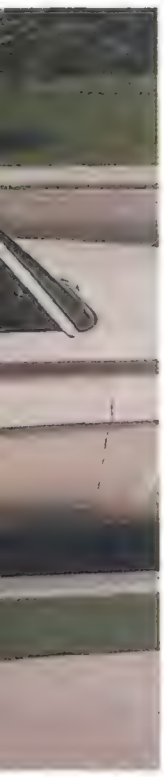

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1980-1999

Possibly the only consistent development in American art in the final decades of this century was inconsistency: a dizzying variety of styles. Ross Bleckner's delicately colored and sensual optical abstractions spoke to the short-lived Op Art movement of the '60s. His work affected a later generation of artists: Philip Taaffe, for example, who borrowed and invented forms in what curator Lisa Phillips describes as "exquisitely seductive, collaged" works. Abstraction, however, had no appeal for Leon Golub. In the '80s, in an atmosphere when narrative art was flourishing, Golub produced a series of powerful paintings of men committing violence against other men. MacArthur Foundation Award winner Ida Applebroog is often described as a "painter and social critic," but her criticism can be subtly muted. The two couples in *Shake* appear to be friends, but the meeting takes place in a stage setting—a social encounter as playacting, perhaps. Charles Ray attracted notice in the '80s with works of abstract sculpture, but by the '90s, his art was also figurative—and a trifle unsettling. His *Puzzle Bottle* encloses a self-portrait that looks less like a living person than a department-store mannequin. It is chilly, but not nearly as cold as Christopher Wool's stenciled letters. We are told that they express a sense of unease and alienation. If there is anything more alienating than a collection of letters that at first seems to say nothing, it might well be Jack Pierson's sobering work *Desire, Despair*, which may say more than we want to know. Finally, despair can be forgotten in the presence of Jeff Koons' playfully ironic *Rabbit*, a bunny that looks like a Mylar balloon but turns out to be a stainless-steel cast of an inflatable toy.

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1 Charles Ray, *Puzzle Bottle*, 1995; **2** Christopher Wool, *Untitled*, 1990; **3** Jack Pierson, *Desire, Despair*, 1996; **4** Philip Taaffe, *Passionale Per Circulum Anni*, 1993-1994; **5** Jeff Koons, *Rabbit*, 1986; **6** Leon Golub, *White Squad I*, 1982; **7** Ida Applebroog, *Shake*, 1980; **8** Ross Bleckner, *The Arrangement of Things*, 1982 and 1985

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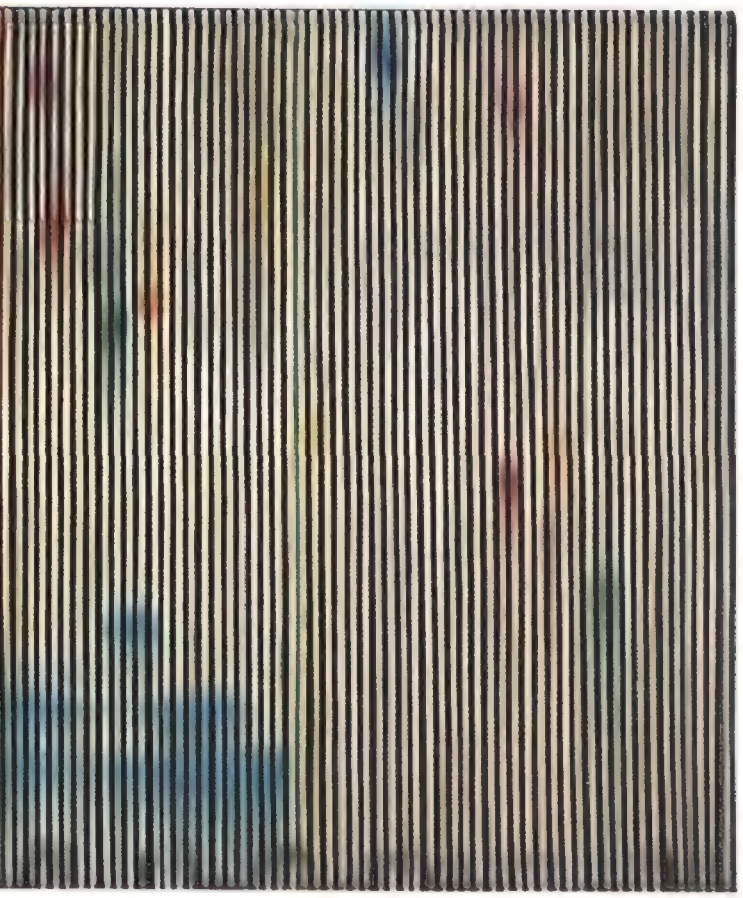

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GET MUDDY, SAVE A CHURCH

BY LES DALY ✠ PHOTOGRAPHS BY MARK S. WEXLER

REGULAR MUDDING EVENTS KEEP CHURCH AND TRADITION INTACT FOR THE HISPANIC COMMUNITIES OF NORTHERN NEW MEXICO

Effervescent 18-year-old Antonia Abeyta plays the trumpet in a mariachi band and is today happily up to her elbows in a community "mud party," both, it turns out, for much the same reason.

"I love the mariachi trumpet notes; I love working with the mud—they're both a connection to our culture," she explains with a smile, tossing a glob of adobe mud onto the wall of the historic church of St. Francis of Assisi in Ranchos de Taos, New Mexico. Antonia Abeyta is immersed in a ritual that brings together the entire community of Ranchos de Taos once each year, to replaster every face, every square inch, of the exterior of this old Spanish church with fresh mud as tradition obliges.

Abeyta, a university student who plans a future in pediatrics, smooths the wet mixture into the wall tenderly, in the time-honored way; you can almost hear the old church purr. Her family has lived in northern New Mexico for "as long as anyone knows," she

A new coat of paint on its cross (above) and Eloisa Mondragón's careful finishing touches with a *zalea*, or sheepskin (right), complete the annual stem-to-stern makeover of St. Francis of Assisi Church.

says. "Just to know that you're doing something that's been done for the last 200 years and you're touching the same walls that your own ancestors touched . . . " she reflects, letting the wet earth ease through her fingers.

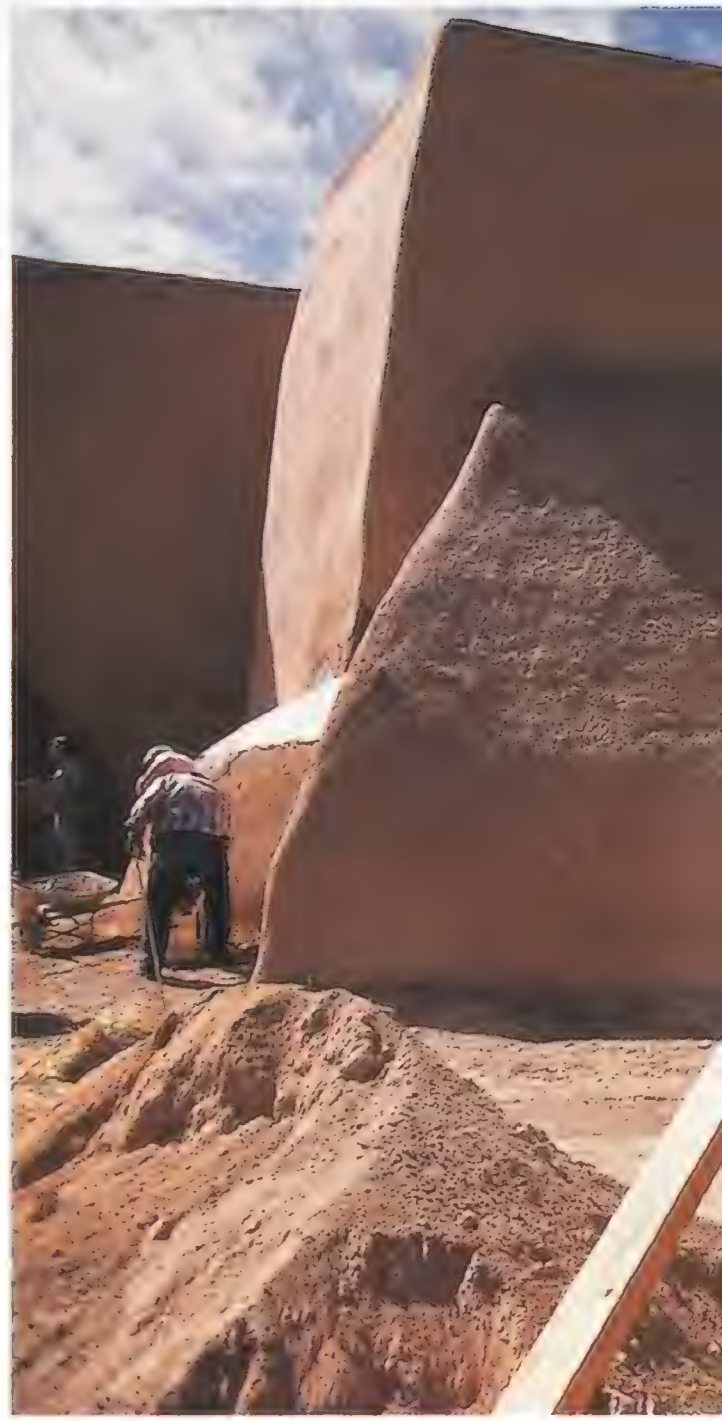
The annual renewal of the church is something of a community responsibility-cum-reunion that holds a place of honor in the June calendar of the Abeytas and all their neighbors. There's a Taos city councilman working here, one of the leading surgeons in town, the 14-year-old Castellanos twins, Amadea and Jannelle, and the "more than 80-year-old" Eloisa Mondragón, affectionately called "Tia" (aunt) Loy. Families are mudding side by side, three generations deep, working the way earlier generations taught them. Today, there are nearly a hundred men, women and children busily resurfacing the building. During the two-week event, most of the families in the parish will happily come to get their hands dirty, so to speak. Or, as one churchwoman says with some pleasure, "Many of them we don't see every Sunday, but almost all of them we see every year."

The sturdy old church of St. Francis is probably one of the most famous churches of any kind in the country, memorialized in paint by Georgia O'Keeffe and in photographs by Ansel Adams, Paul Strand and countless thousands of lesser-known photography enthusiasts. There is hardly a straight line to be found on its undulating walls. Sometimes in the mid-afternoon heat, the building appears to be slowly on the move.

It is built of adobe bricks, which are made from an ancient recipe of sun-dried clay, sand, silt, water and straw. An adobe brick weighs about 30 pounds and is about the size of a pair of stacked laptop computers. Properly plastered and protected, the bricks can last for centuries. In the 1950s and '60s, however, a widespread preservation effort was undertaken to coat the church of St. Francis and many other old New Mexican churches in cement stucco and to abandon mud plaster. The new technology, it was hoped, would be more durable and require less maintenance. The result was disastrous. The cement trapped water that silently and steadily eroded the adobe bricks underneath. In 1979, with cracks rampant and plaster falling, the cement was ripped off the walls of St. Francis to reveal thousands of wet, crumbling bricks and a building near collapse. It took more than 40,000 new adobes—15,000 for the buttresses alone—to repair the damage. Since then, thousands of hands like Antonia Abeyta's have again dressed the church the old-fashioned way: with a simple plaster of mud and straw. Traditions, and buildings, die hard here.

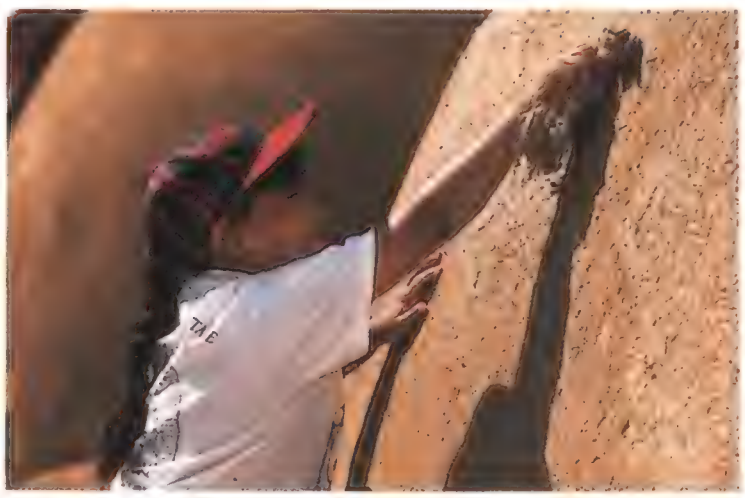
The church at Ranchos de Taos was built in the early 1800s, when Spain still ruled the region. The United States would not arrive for another generation and a half, after a war with Mexico that produced what some older folks still refer to as the American Occupation. Watching the Americans ride in were the Chavezes, Bacas, Archuletas—families that had already been here for some 250 years, their culture and heritage deeply planted. As I stand amid the mudding crowd at the church of St. Francis, I remember being impressed long ago when I met a woman who told me her ancestor came over on the *Mayflower*; the roots of many of the people around me now were put down here long before the *Mayflower* ever left England.

This, though, is no time for contemplation. With a firm but friendly smile, 13-year-old Sarah Cordova asks me, "Why aren't you mudding?" Her father, Rudy, is a *mayordomo*—an honorary lay caretaker of the church—and the foreman of the plastering job this year. Sarah and her 14-year-old sister, Sonya, have been hard at work since the early morning mass and seem



St. Francis volunteer Mark Cárdenas uses a lawnmower to chop straw (above), which will be mixed with local dirt shoveled through a screen (right) to remove pebbles. Opposite: Rosa Duran applies the final product.

mildly intolerant of non-workers. Moments later I have joined the party, and find myself enjoying the act of tossing handfuls of freshly mixed wet mud against the wall.



"What are you so surprised about? Everybody loves to play in the mud," laughs Esperanza Valerio. She is a painter and sculptor who produces detailed, three-dimensional wall hangings of such landmarks as the Taos Pueblo and the church of St. Francis, made out of wood and earth much like the buildings themselves. She aptly calls St. Francis a "community sculpture." As her hands gracefully mold one of the large, round buttresses, she tells me how a hard rain came several years ago, just as they had finished mudding. "But then a rainbow came out," she says, "and we said 'Hooray, He must like our work!'"

That is a tough act to follow, but I toss and spread and smooth in the hot sun under the smiling if skeptical eyes of Margie Romero and Tia Loy. Wet the wall so the mud will stick, throw a handful, smooth it with the heel of your hand, not your fingers, in an arc, they tell me, patiently. It is an engaging notion, to be in touch with Antonia Abeyta's ancestors this way, to shake earth-covered hands, as it were, and help to preserve their building. The party is open to anyone who wants to come by and stay to work. Just before noon, a troupe of touring young women from Drew University in New Jersey appears in the plaza. Rudy Cordova hospitably invites them to join the crew for lunch and an afternoon of work. By 4 o'clock, Laura Woodworth, a 20-year-old junior from Malvern, Pennsylvania, who is well-freckled by bits of dried mud and straw, has been unofficially named "rookie of the year" by some of the old-timers. She announces, "I could do this for the rest of my life." Toward the end of the day I glimpse Tia Loy silently "retouching" my enthusiastic but unskilled efforts.

The straw, chopped up by a gas-powered lawnmower, serves as a binder. I ask Ernie Lopez, who is an internationally recognized science teacher at the Taos Middle School, how much clay, sand and straw goes into the mud mix. "We know whether it's right or not because Tia Loy tells us," he confides. "Too much straw, it won't smooth; not enough, it won't stick—one handful and she knows. She is the heart and soul of this job." When I ask her how long she's been doing this, she says, "Oh yes, a long, long time."

Although outside experts and other unmuddied critics claim the straw doesn't contribute much, tradition says it does. In this part of the world tradition wins. An old saying goes: *Un adobe sin paja es un adobe sin alma* (An adobe without straw is an adobe without soul). And if that weren't enough, Corina Santistevan, the unofficial historian of the parish and a participant in the mudding process for many years, affectionately casts her own straw vote. "It is the straw that helps make it golden in the sunlight," she says. Discussion over.

"You start working here as soon as you can lift a one-gallon bucket of water," says Ernie Lopez.

Historically, women applied the required three coats of plaster by hand; the men did the heavy loading and mixing. But history moves on. Trowels came in with the Occupation and, after 150 years, have been accepted, although much of the plastering, especially at the lower levels of the building, is still hand-done, and the entire process today is more of an equal opportunity undertaking. Men, women, girls and boys are sifting sand, mixing mud, wetting walls, pushing wheelbarrows and plastering. The men tend to be assigned to ripping and tearing off the old, cracked plaster that's required before the new mud can be applied, working high on the scaffolds and riding the crane to reach the parapets and the twin bell towers. Ernie Lopez describes the career track of a mudder: "You start working here as soon as you can lift a one-gallon bucket of water, and you grow with it over the years and it's all passed along from one generation to another so eventually everybody does something of everything."

The method of applying the finishing coat that gives the building its smooth texture is pure living traditional handicraft, a tradition that many believe dates back to the Moors. At St. Francis, a thin mixture of mostly dirt and water is hand-rubbed with woolly sheepskins over every outside surface of the entire structure. "That," says 13-year-old Sarah Cordova, "is the funnest part." The skins are donated by local sheep ranchers and washed in order to try, with modest success, to remove some of the fragrance. The wool is gentle to the mud coat, and the wet mixture fills practically every crack and uneven space. It dries and ages to a rich, smooth finish the color of *café con leche*, a mellow hue that photographers from all over the world find irresistible.

Villages like Ranchos de Taos, and other communities even smaller, are tide pools of culture and tradition left behind after the Spanish crown and church washed over the region and then receded. Today, they work to continue in their own ways, and the proprietary care for the local church building is just part of that deeply held heritage. Much of American history is a story of migration and romanticized restlessness, but the descendants of the first Spanish colonists are still here where they first settled. Sam Baca's tenth great-grandfather, Cristóbal Baca, arrived here in 1600 and received a small land grant on the Santa Fe River. Today, 400 years later, Sam Baca lives less than a quarter-mile away from Cristóbal Baca's original settlement.

"Being rooted in place is such a critical thing in our culture," Baca remarks. "That's why the land is so important to what we do; that's why we build with earth, and plaster with earth. You are totally integrated in your place, in where you are."

The 52-year-old Baca, who holds a master's degree in social work from the University of Michigan, tends this heritage of "place" full-time. He is part of a Santa Fe nonprofit group called Cornerstones Community Partnerships, which provides technical support and encouragement to "reawaken" nearly forgotten traditional building skills in communities trying to save their churches, and which reminds old and young alike, often including youngsters at risk, of the continuing utility of those skills.

"Other people can come in and totally change the face of what's hap-

A good reason to smile: Father Vincent Chavez stands in front of the Arroyo Seco church, originally built in 1832 and restored three years ago.

Meet Aage Kristiansen: This Swedish scientist, trained at the renowned Gothenburg Technical Institute, joined Tempur-Pedic in 1989 at a critical time—when building the first weightless sleep system (with promising but unperfected aerospace materials) seemed impossible. Aage discovered the formula and patented the process that saved the company's Tempur® project from abandonment. His colleagues were euphoric! He was hailed as the "father" of the Tempur-Pedic revolution, which has fundamentally changed the way people sleep. Aage now lives in Sarö, a small coastal village 20 kilometers south of the city of Gothenburg.

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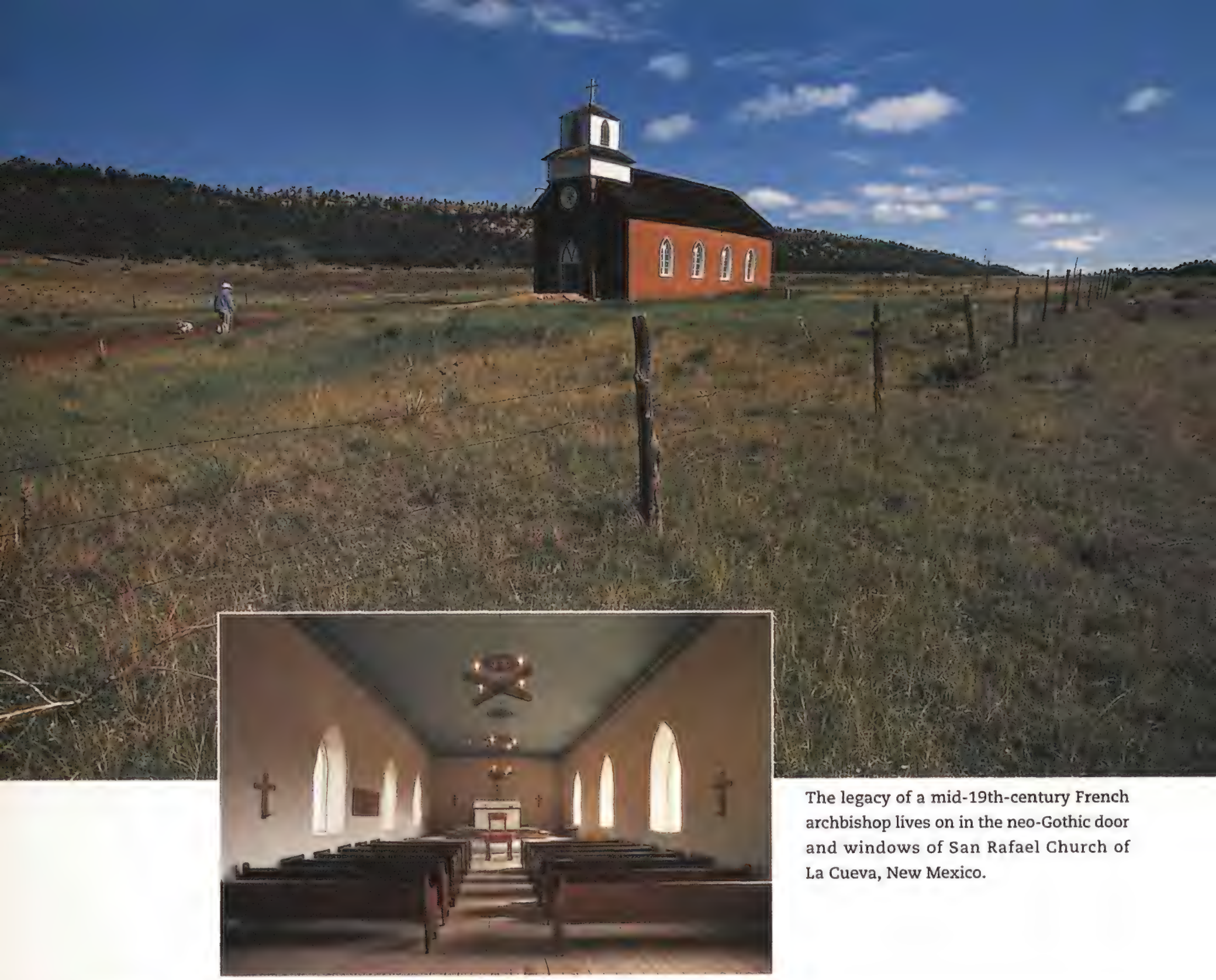

The legacy of a mid-19th-century French archbishop lives on in the neo-Gothic door and windows of San Rafael Church of La Cueva, New Mexico.

pening around you," says Baca, "but it doesn't change your relationship to where you are; it does affect it, but it doesn't reach the roots."

When it comes to the community churches, those roots often become somewhat entangled with technical legalities. The archdiocese holds legal title to these buildings, but the people have a long-nurtured sense of ownership. The Reverend Vincent Chavez, whose family has been in this region since 1598—barely 100 years after Columbus reached shore—observes pragmatically that the institutional Catholic church concentrated its efforts in New Mexico for centuries on "the pastoral care of the pueblo people" and tended to neglect the Spanish settlers. The colonists fended for themselves, religiously and nearly every other way. They built and used their churches on their own initiative and "saw a circuit priest perhaps once a year." Thus, there was little doubt in their minds about who "owned" the church. Moreover, the churches were often the biggest buildings around and became the center of community activity. Sometimes fortified with a surrounding wall, they also served as a refuge when the community was confronted by nomadic Indian raiders.

"The Spanish settlers really had a sense of themselves," Father Chavez remarks. The slender 36-year-old son of ranchers sports a trim mustache and goatee, cowboy boots, a silver belt buckle in the shape of a horseshoe. It is hard to escape the thought that if his carefully turned cowboy hat were black like his clerical shirt and jeans, central casting might well recruit him for another calling. But, surprising as it may be, it all seems to work somehow in this multicultural, multihistoried place. He is now the pastor of the parishes of Taos and Arroyo Seco, a small village spread along a wide curve in the road that skiers drive quickly by on their way to the Taos ski runs. He is also chairman of the commission of clergy and lay specialists created by the Archdiocese of Santa Fe in the late 1980s to oversee the preservation of the more

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Not even the patron saint of St. Francis Church in Ranchos de Taos can escape the ministrations of the community's enthusiastic volunteers.

than 300 historic churches that dot northern New Mexico.

He thinks carefully about the issue before saying softly, "There is a kind of a fine balance between the church's legal ownership and the community's perceived ownership, and we have to keep that balance. The care and destiny of the building belongs to the people, and ultimately the archdiocese depends on the support of the community and their interest in the building." The commission prohibits any alterations to the main structure of a church, or the addition of anything that can't be removed. "Beyond that, though, we have no real way of enforcing the guidelines regarding restoration and preservation," he concedes.

Churches still proudly standing in remote settlements such as Upper Rociada and La Cueva are evidence that strong community traditions can overcome bureaucracy on a state or clerical level.

Upper Rociada lies where the paved road ends, in a valley 30 miles northwest of the old frontier town of Las Vegas, New Mexico. For some years its mid-19th-century church of San José had deteriorated, until it finally was condemned by state authorities. Worse, perhaps, was that the crumbling little structure had been condemned by an even higher authority: the archdiocese determined it was not interested in rebuilding the church since there was another one only a couple of miles away. Former mayordomo Ted Martinez recalls that the archbishop gave San José to the community so it could be left to melt into the ground where it came from.

There is a saying sometimes heard around New Mexico that aptly describes what happened next: *Obedezco mas no cumplo* (I obey but I do not comply). Upper Rociada is home to only about a dozen families, which is the way populations are generally counted around here. About "eight or so families" decided politely to save the church anyway, says Ted Martinez, a man who was determined, you might say, to move heaven and earth to get it done.

It took seven years, 11,000 adobe bricks for the walls, a new roof, new hand-hewn beams in the ceiling, a refinished inside and new mud plaster outside. The green corbels beneath the beams had been hand-carved by the original settlers—no two are exactly the same—and remain untouched, as a visible link to the past. Help came from Cornerstones, neighboring villages, students at nearby colleges and extended family members who had left home years before but came back from time to time to pitch in.

"Yes, we knew it would be hard work, but it had to have been harder for our ancestors when they built it, and they did it," Martinez says matter-of-factly, "so we knew we had to do it, too. We still live on some of their original land grants from the 1800s," he adds. "This was something important we had to have to keep us together here."

When the church was completed, the rededication mass was celebrated by the archbishop. "When it was over," Martinez recalls with some satisfaction, "I walked up to him and handed him the piece of paper of ownership and gave the church back to him."

Ultimately, the adobe community churches of New Mexico are living architecture; not only are they what the original builders created, but they are also a compilation of everything that has occurred since. The accumulated past, it might be said, has been made part of the present to be preserved. And that, says Sam Baca, "is part of the tradition."

"There is a balance here, a sense of responsibility, to respect what previous generations have done," Baca explains. "Good stewardship is a value that has been passed down throughout our culture, not so much to build something new or to change the building, but to understand the importance of this building to our people and teach that respect to the next generation."

Tia Loy, Ted Martinez, Antonia Abeyta, their friends and neighbors in small Hispanic communities all around northern New Mexico, were well taught, and understand and respect it well.

Les Daly has written about the excavations at the Zuider Zee and on modern French cave dwellers. Mark S. Wexler has photographed stories on Harris Tweed and Gibraltar.

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SPACEart

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BY LEE E. BATTAGLIA

I'M A RETIRED PHOTO editor and an active artist, and I've long been a fan of spaceflight. I witnessed my first space launch at Cape Canaveral—a shuttle mission—in 1984. The next year, I went to Baikonur in the Soviet Union to watch another liftoff. By the time I had seen several more, including a French Ariane rocket launch at Korou, in French Guiana, I was well and truly hooked. The power and beauty of these machines as they thundered skyward impressed me deeply, and I resolved to participate in the spaceflight adventure in my own way.

In the course of my travels, I noticed that artists in many countries were captivated by the images of humans venturing into space—and sometimes by the idea of benevolent beings from other worlds visiting earth. Their works, often whimsical, always intriguing, were irresistible, and I began to collect them.

Artists of other ages reflected and interpreted the world they lived in. But with the exception of a few astronaut and cosmonaut artists, no present-day artist has been in space. At best, their experience of space travel comes from television, photographs, films and books, even word of mouth.

But their work makes up in imagination what it lacks in realism. In his *Village Visitors* (left), Texan Joe McAlister depicted happy aliens in paint and tin. On the other side of the world, Wonder Mutorera, a wood-carver from Zimbabwe, had never seen even a photograph of a space vehicle; for *S.O.S.* (above), he invented one that closely resembles a giant, distressed beetle flying over an African village. Carolyn Lloyd Swain, of Virginia, used wood and acrylics to create *Heaven Bound* (right)—with astronaut as angel—her tribute to those who have lost their lives in space.

The vision of most of these artists reflects their desire to rise above the plain facts of their lives here on earth. My contact with them, through their fanciful works, enables me to share their vision, to accompany them on this journey.

Clockwise from left: Navajo artist Delbert Buck made *Round-Up Time* with wood, cloth, string and leather; "Dr. Bob," aka Robert Shaffer, of New Orleans used acrylics and found materials for *Lust In Space*; in *Kosmo*, Nikolai Ivanovich Golikov of Russia layered a wooden box with egg tempera and lacquer; Californian Gail Paradise's *Tea for Two* is of glazed clay; *Intergalactic Cruiser* by Sonny Dalton of Michigan combined a Harley-Davidson motorcycle muffler with keys from musical instruments; *Out of This World* is a cast pewter and wood night-light by Mississippian Barry Grishman; Woody Jones of Georgia created *Space Command Center* from wood, plastic and acrylics.

Near the two-story frame house he built in 1886, Thomas Edison (above), who prized his Southern retreat and its palm trees, set up a well-equipped research facility (right).

AT SEMINOLE LODGE, WHERE THE INVENTOR WINTERED OVER IN FORT MYERS, FLORIDA, HE KEPT A SECOND LAB GOING STRONG

BY RICHARD & JOYCE WOLKOMIR

Mr. Edison Ta

kes a Holiday

"I'M JUST ABOUT THE ONLY PERSON LEFT WHO ACTUALLY worked for Mr. Edison," says Bob Halgrim, who is 94 years old. He warns his visitors: "The good Lord keeps me alive to tell lies!"

His home is a five-minute walk from Seminole Lodge, the house and laboratory where Thomas Edison wintered in Fort Myers, Florida. Today, the estate, open year-round, draws 325,000 visitors annually. It is where Bob Halgrim—starting in high school—worked as the great inventor's all-around factotum.

"His doctor said he had to eat something every two hours because he had diabetes," Halgrim says, "and he told me, 'You make me eat it!'" Every two hours, Halgrim fetched Edison's snack. "'Eat it,' I'd say. And he'd say, 'All right,' but he'd be in the lab working and he wouldn't eat it. So I'd sit down and stare at him, and he'd laugh. Then he'd eat it."

At 5 feet 10½ inches tall and 185 pounds, Halgrim was close to Edison's size. "But he had a peculiar body because his right shoulder drooped about four inches," says Halgrim. "He always had his right hand in his coat pocket for photographs, so his shoulders looked level."

Halgrim was not yet born when Edison first visited Florida. Edison was only 35. But he had already invented an electric vote recorder, a stock ticker, advanced telegraph systems, an electric pen (SMITHSONIAN, August 1998), a mimeograph, a carbon transmitter that ushered in the commercial telephone and radio broadcasting, and the first practical incandescent lamp. He had started the first passenger electric railroad. For a man born on the Ohio frontier, in 1847, and raised in a Michigan lumbering town, with just three months of formal schooling, Edison was doing well.

He had taken time from workaholism to marry Mary Stilwell, a sawyer's daughter, who proved a disappointment. In his notebook, on February 1, 1872, Edison wrote perhaps the oddest comment ever made about a pretty young wife: "Mrs Mary Edison My wife Dearly Beloved Cannot invent worth a Damn!!" Two weeks later, another notebook entry: "My Wife Popsy Wopsy Can't Invent."

Edison neglected his three children and his wife to work perpetually in his New Jersey laboratory, often forgoing sleep and pausing only for catnaps. In the winter of 1882, with Mary ailing, the Edisons vacationed for the first time in northern Florida. Edison discovered that he had a liking for winter sunshine.

By the winter of 1883-84, with Mary still sick and Edison suffering from neuralgia, probably from overwork, the family had returned to St. Augustine, Florida. But Edison barraged his staff with telegrams about the power station they were setting up in Manhattan. A few months later, Mary, not yet 30, whom a doctor had described two years earlier as "nervous and despondent," died of "congestion of the brain." But the more likely cause, says Olav Thulesius, vice dean for research on the faculty of medicine at Kuwait University and author of *Edison In Florida*, was a brain tumor. Edison, his daughter later wrote, was "shaking with grief, weeping and sobbing."

Edison was now a millionaire industrialist, famous, only 37 years old, and the single father of three children whom he had no clue how to raise. In 1885, friends living in Boston introduced him to Mina Miller, an Akron,

The industrious inventor cherished his jaunts with friends. This group, in West Virginia in 1918, includes, from left: Edison, standing with Harvey Firestone, Jr.; naturalist John Burroughs and Henry Ford, on the wheel; and Harvey Firestone. Firestone senior visited Fort Myers often; Ford was Edison's neighbor in Florida.

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Ohio, socialite whose father manufactured farm tools and had cofounded the Chautauqua Association. Edison was nearly deaf, most likely from childhood scarlet fever, but he could hear when people spoke directly into his ear. To converse more privately with Mina, he taught her to communicate in Morse code by tapping her finger on his hand.

Later that winter, in Chicago on business and sick, Edison opted for a Florida cure. But this year St. Augustine proved chilly. Someone suggested Florida's southern Gulf Coast, still a frontier but warmer. Edison and two friends rode a succession of trains across northern Florida to the Gulf. From Cedar Keys, Edison sailed down the coast in a sloop to Punta Rassa, a rudimentary port for loading cattle, situated across the blue bay from Sanibel Island.

Edison, who had begun working at age 12, selling newspapers and snacks on a train and publishing his own on-train newspaper, had by age 16 become a telegrapher. He took a liking to Punta Rassa's telegraph operator, who described the charms of nearby Fort Myers. The cattle hamlet, up the mile-and-a-half-wide Caloosahatchee River, was a place where imported giant Japanese bamboo grew. Edison's agents were then scouring Asia and South America for bamboo! (The inventor hoped the plant's fibers could be used as filaments for incandescent lights.)

Edison sailed in a sloop up the Caloosahatchee, past oaks festooned with hanging moss. Fort Myers, population about 300, mainly cowboys, had a dry goods store, one hotel. Mangoes. Blossoms—red, yellow, purple. Within a day, Edison decided to buy 13 riverside acres for $2,750, to build a winter home.

When he returned north, he tapped out a marriage proposal in Morse code on Mina Miller's hand. She tapped back her acceptance.

Edison began issuing directions for his new Florida home and laboratory, and an adjacent home for the Gillilands, who had introduced him to Mina. "We will erect two dwellings on the riverfront and place the laboratory and dwellings for workmen on the other side of the street," Edison

Edison was supremely attached to the 1916 Model T that he used for touring on Florida backroads. The inventor's friend Henry Ford had given him the automobile.

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As a 39-year-old widower, Edison married 20-year-old Mina Miller on February 24, 1886. The couple spent their honeymoon at the house in Fort Myers.

instructed his Florida agents. "Our buildings are being made in Maine and will be loaded aboard ship at Boston. We will send four of our employees to superintend the work. . . . " First, workers built a long pier into the river, so laden boats could unload the preassembled house sections.

The side-by-side Edison and Gilliland houses were modest. Edison's two-story, white-clapboard winter home had green shutters, a red roof and a wraparound porch. "There were wild ducks by the acre, the river was full of fish, and it seemed to afford a perfect opportunity for rest and recreation," Edison told an interviewer. To ward off impending leisure, however, he built a laboratory.

Fort Myers was agog. Fort Myers had been a town for not quite two decades when Edison first arrived in 1885, but boosters expected his fame to rub off. On February 27, 1886, the *Fort Myers Press* announced: "When Mr. Edison arrives with his newly made wife, Fort Myers can laugh at her neighbors and defy competition."

When the Edisons did arrive, their house unfinished, they began their honeymoon at the Keystone Hotel. Soon, they moved into their new home, serenaded by the Fort Myers Brass Band. Before long, Edison was dispatching instructions to his lab up north that he wanted to be "posted every two or 3 days." He followed up with an eight-page letter, detailing experiments he wanted done.

Paul Israel, author of *Edison: A Life of Invention* and a scholar with Rutgers University's Thomas A. Edison Papers project, has analyzed notebooks Edison kept on his honeymoon. He found that Edison planned telegraph and telephone improvements, and he sketched ideas for a cotton picker, a better phonograph, hearing aids, artificial silk. He even mused about an undiscovered force of nature, which he called the "XYZ force."

Mina helped out, too. The newlyweds tried to "shock an oyster [to] see if it wont paralize [sic] his shell muscle & make the shell fly open." It proved a "Dead failure."

Eventually, leaving electrified oysters in their wake, the honeymooners returned to New Jersey. Edison resumed nonstop work and Mina discovered what she was up against. (Years later, *Collier's Weekly* would run an interview with Mina titled: "She Married The Most Difficult Hus-

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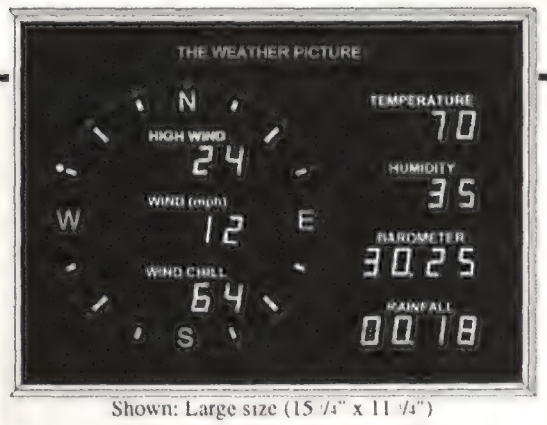

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Today, tourists can cruise Edison's Caloosahatchee River haunts in a replica of Edison's original electric launch, the *Reliance*.

band in America.") But Mina was sturdy. Soon she was pregnant.

In February 1887, afflicted with a chest infection and rumored to be so sick he was enfeebled, Edison returned to Florida. A *New York World* reporter hurried to Fort Myers. "Rest! Why, I have come down here to work harder, if anything," Edison testily informed the newsman. "I will tell you how I rest: I am working on at least six or seven ideas."

Edison's first Florida laboratory, says biographer Olav Thulesius, "looked like a big steam locomotive." There was a boiler, a chimney, workbenches, flasks. There was a 40-horsepower steam engine. There was a study, with a cot for catnaps. (The second laboratory, constructed in 1928, is the one visitors see today.)

Edison called his riverside home-laboratory enclave Seminole Lodge. On March 27, 1887, virtually all of Fort Myers trekked out to see the lodge's electric lights go on.

The inventor did not return to work there again for 14 years. From 1888 to 1901 the Edisons stayed away, partly because Mina gave birth to a girl and two boys, bringing Edison's brood to six. With toddlers, she was reluctant to travel to Fort Myers. Now there was a train, but it was unreliable at best. Yellow fever was a worry, too.

Edison, meanwhile, was hyperkinetic—improving the phonograph, developing a motion-picture camera, inventing the fluoroscope, working on magnetic ore separation, creating a new cement industry. He also fought with Ezra Gilliland, his Fort Myers neighbor and his friend since their telegraph-operator days. In 1892, Gilliland ended up selling his Florida house to an oil tycoon.

On February 28, 1901, the Edisons finally returned to Fort Myers, the steamboat flying all its flags in their honor. Edison promised the *Fort Myers Press* he would return every year. And in 1906 he bought the former Gilliland home and connected it to his house with a walkway, transforming it into a guesthouse.

On his 60th birthday, February 11, 1907, Edison vowed to "give up the commercial end." He wanted only to "work in my laboratory as a scientist." In 1908, he said he would "take life more easy." Even so, he continued perfecting his storage battery, working on his cement plants, dealing with the damage to his phonograph business from the Panic of 1907. But his and Mina's son, Charles, said he could not visualize his father at Seminole Lodge "without a fish pole some of the time." Charles remembered Edison averring that fishing "was the greatest relaxation he knew of."

CAMERON DAVIDSON

Meanwhile, Edison acquired a new chum, Henry Ford, who had been chief engineer with the Detroit Edison Company, idolizing his boss from afar. Ford finally spoke to Edison in 1896, during a convention of the Association of Edison Illuminating Companies. Edison was then experimenting with battery-powered cars. Ford was developing a gasoline-powered car. In *Edison: A Biography*, Matthew Josephson wrote that Edison cupped a hand to his ear to hear the youthful Ford describe his research. Then Edison banged a hand on the table. "Young man," he said, "that's the thing! You have it!—the self-contained unit carrying its own fuel with it. Keep at it." In 1916, to be near his idol, Ford bought a house adjacent to Seminole Lodge. (Ford's home is now open to the public, also. The two houses are known, collectively, as the Edison-Ford Winter Estates.) Tire magnate Harvey Firestone, who wintered on Florida's east coast, became a frequent visitor.

Edison, Ford and Firestone palled around together and swapped jokes. Edison fished. Olav Thulesius quotes Mina: "[Mr. Edison] takes a great interest in fishing, though he doesn't catch much except catfish. . . . He was delighted when he caught a record tarpon. His greatest joy, however, was to catch a shark, which he would do occasionally. The fish got more and more elusive. And the pier got longer and longer, going out into the river fifty feet at a time. It is now 1,140 feet long, and I don't suppose it's stopped growing yet."

Photographs show Edison on his dock, contemplative, holding a fishing pole. He also fished from his electric launch, the *Reliance*. But he simultaneously used the boat to test his new nickel-iron-alkaline batteries.

Once Edison excitedly reeled in a small tarpon. But his son Charles—who would become Secretary of the Navy and a Democratic governor of New Jersey—caught a gigantic 100-

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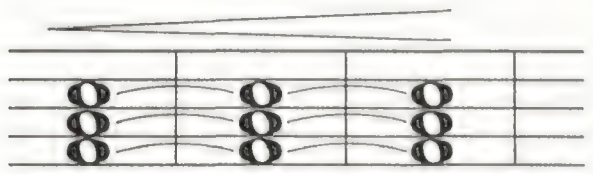

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Mina Edison donated Seminole Lodge to the city of Fort Myers in March 1947.

pounder. Edison was for throwing his fish back in disgust. Both fish wound up mounted, however, on a Seminole Lodge wall.

Edison's comrade Ford, an ardent birder and friend of the famous naturalist John Burroughs, also shared the inventor's interest in nature studies. On February 13, 1914, Edison told the *New York Times* the two of them and Burroughs would rough it in the Everglades. But Edison inserted a proviso suggesting lingering workaholism: "If I get an idea I will leave my companions temporarily and go to my laboratory there to work it out." After the Everglades, the trio camped annually, joined by Firestone.

Burroughs noted that Edison was "the centre" of the group, "a storehouse of facts and figures on all subjects." He was "a big-brained man & genial & good-natured [with] a big fund of all kinds of stories." Edison, watched by Burroughs, spent hours slicing plants to see if they exuded milky sap that could be processed into rubber.

Inspired by a visit to Luther Burbank, the great horticulturist, Edison had become increasingly consumed by botanical research. At Seminole Lodge he grew bamboo, fruit from bananas to mangoes, and such exotics

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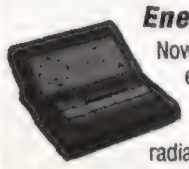

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as the golden rain tree, pincushion trees, lipstick bushes and the miracle leaf plant, which grows tiny new plants along its leaf edges. (In 1907, as a gift to Fort Myers, Edison lined McGregor Boulevard with royal palms.) And he used the garden for his final project: finding a domestic source of rubber.

Worried that war could block America's rubber supply, Edison searched for a rubber-producing plant that would grow in the United States, experimenting at Seminole Lodge with guayule and Madagascar vine. He worked on a sap-extracting pump. He carried a chunk of crude rubber in his pocket to show guests.

On his 80th birthday, Edison announced the formation of the Edison Botanic Research Corporation, funded by Edison, Ford and Firestone, to search for a domestic rubber-bearing plant. "Everything turned to rubber in the family," Mina Edison lamented. "We talked rubber, thought rubber, dreamed rubber. Mr. Edison refused to let us do anything else."

After two years of tests on some 14,000 plants, and a flirtation with honeysuckle and milkweed, the aging inventor hit upon goldenrod, which yielded about 5 percent rubber. He bred a 14-foot-tall goldenrod, dubbed

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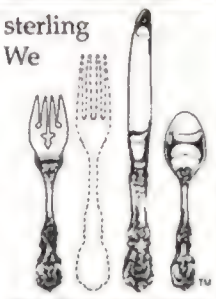

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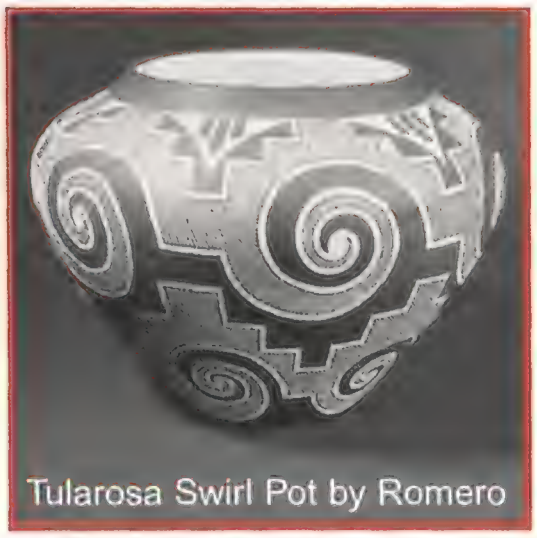
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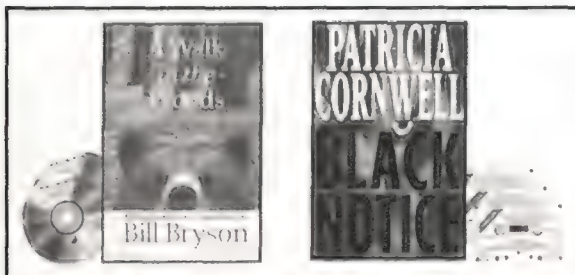

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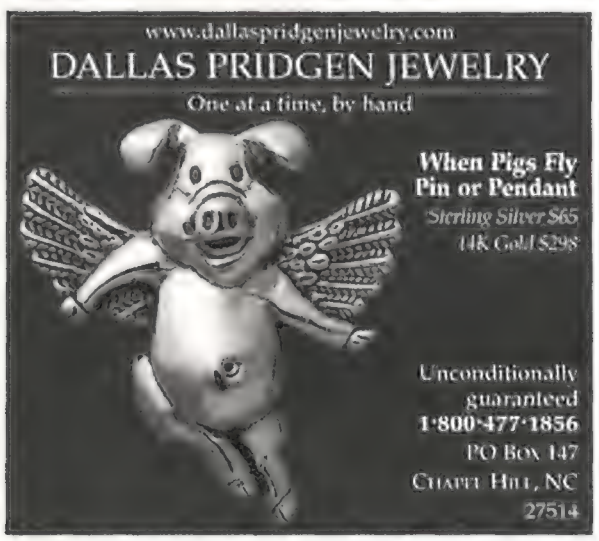

Edison, given to all-night stints in his lab, once claimed "sleep is an absurdity." But in 1921, when he was 74, he was caught napping on a sojourn in the Blue Ridge Mountains.

Solidago edisonia, that oozed an impressive 12 percent latex. Ford purchased land in Georgia to grow goldenrod, but then new synthetic rubbers proved more economical.

It was just before the rubber years that Bob Halgrim became Edison's helper, starting as a teenager. "My father owned the town's silent-movie theater, and every time we changed the film, I had to let Mr. Edison know," says Halgrim. "Mr. Edison would sit right in the front row and look up at the pictures—he loved motion pictures."

In 1925, when he was a high school sophomore, Halgrim got promoted. "I'd work weekends, teaching his grandchildren swimming and sailboating," he says.

Halgrim began assisting Edison. Then, the inventor sent him to Cornell University to study horticulture. Two years later Halgrim got a peremptory message: "I want you back here to work on rubber," Edison said.

Edison was a tough boss. "He could read lips," says Halgrim. "Somebody 40 feet off across the lab might say something he didn't like and suddenly find the boss telling him, 'Get the hell out.'" Usually the secretary gave the "fired" man a wink, saying, "See you tomorrow." "I was fired lots of times myself," says Halgrim.

Edison, who labored about ten years on his most commercially successful invention, the alkaline battery, with 9,000 failures, expected employees to work hard. "One afternoon at a quarter to five I was just piddling around, getting ready to go home, and Mr. Edison saw me," says Halgrim. "Is that all you've got to do?" Edison demanded. He handed Halgrim a hacksaw and a piece of hard steel: "I want you to cut this into one-inch cubes." One cut took an hour and a half. "That the best you can do?" Edison demanded. "Yes, sir," Halgrim said. "Don't forget that—whatever you do, you do it to the best of your ability!" Edison admonished. "The damned thing was, the lab had an electric saw," Halgrim says. "But Mr. Edison wanted to see if I could take instruction."

Edison could be milder. "He'd give you an assignment, then he'd check on you every hour," says Halgrim. "If you were making a mistake, he'd tell you a joke to get you laughing, then he'd say, 'Let's do it this way.'"

Edison loved jokes. James Newton, a friend of Edison's, wrote a memoir, *Uncommon Friends*. He once stopped at the Ford home and found the automobile tycoon dictating jokes to his secretary, who typed each one on a separate piece of paper. Ford slipped

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half a dozen of them into his pocket. Then they visited Edison.

"Soon enough, they were swapping stories," wrote Newton. "Edison was the best storyteller I've ever heard. He was a past master of timing. When he delivered the punch line he would explode with laughter; we'd all double up. That day, Edison would tell a joke, we'd all roar, then Ford would draw out one of his slips of paper, open it up, and hand it to Edison—he couldn't talk loud enough for Edison to hear, unless he wanted to be heard all the way down in the middle of town. Edison would read, roar at Ford's joke, and Ford would take the paper back, tear it in half, and put it in another pocket. I guess he didn't want to 'tell' the same joke twice." "Edison pulled jokes on everybody," Bob Halgrim says.

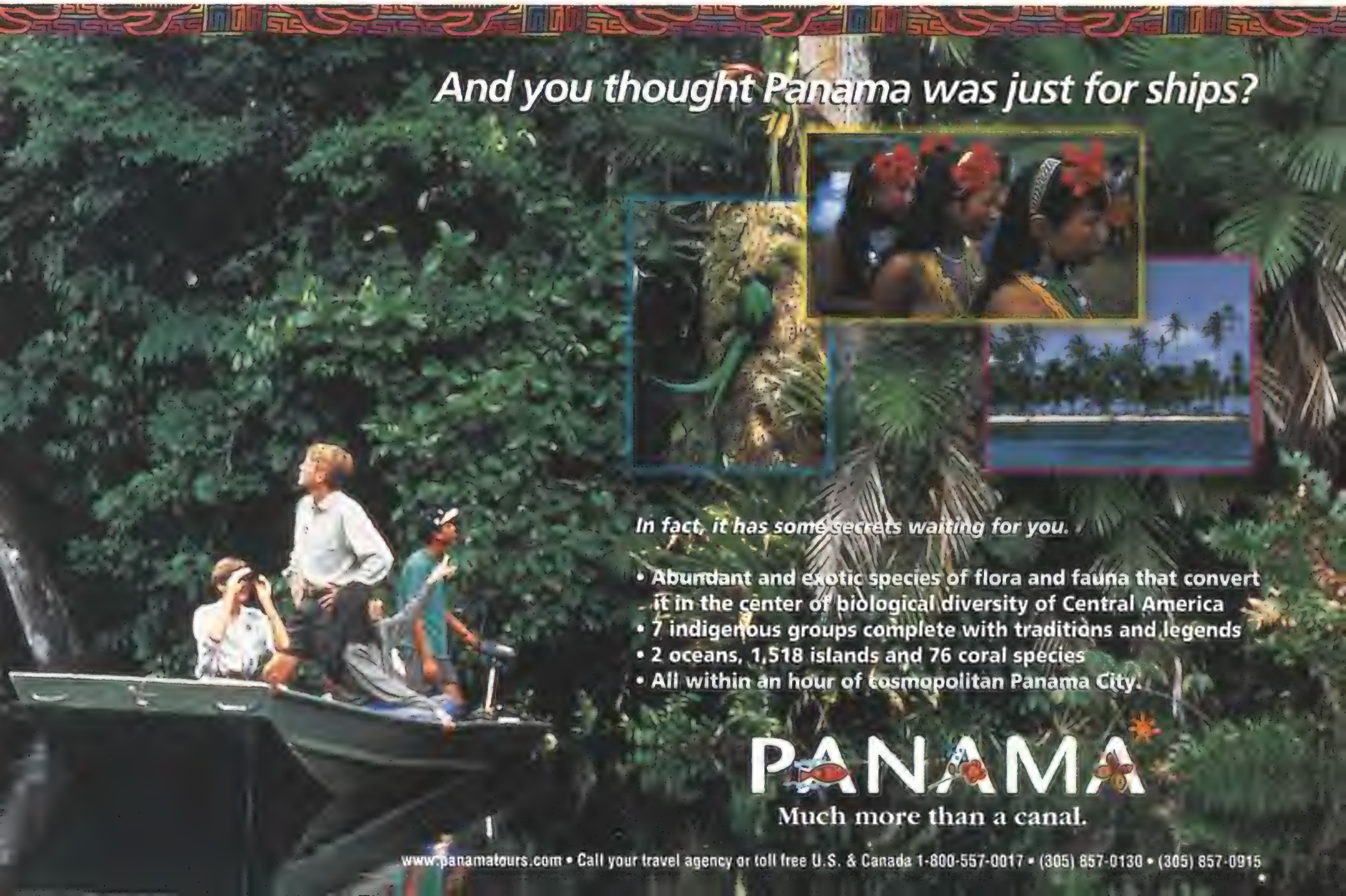
One time, for instance, Edison told wealthy guests from West Palm Beach that Florida's cattle business would grow because "Florida beef is a lot sweeter." One visitor shook his head. "Florida beef is too tough," he pronounced. The other nabobs nodded, which piqued Edison. "He always had me with him, because of his deafness—he never even watched for traffic," Halgrim says. Edison took Halgrim outside. "Let's go to work," he said. "This time he had me cut off strips of leather, and then he had the cook cover the leather with steak sauce and serve it to the guests," Halgrim recalls. The next day, Edison beamed. He told Halgrim: "I had the most fun watching these fellows trying to eat that strapping!"

Edison disliked exercise. The body's chief job, he believed, was to carry around the brain.

Edison could be ribald or boorish, too. "On the Fourth of July, he'd throw firecrackers into the midst of the kids to watch them jump around," says Halgrim. Especially with his first marriage's three children, Edison was an inattentive father. But Bob Halgrim remembers crowds outside Edison's home, hoping to meet him: "He would ignore the adults, but he'd make time to talk to the kids."

In 1910, Edison built a swimming pool at Seminole Lodge using cement from his own company, which had produced cement for Yankee Stadium and most of the Panama Canal. He invented a waterproof electric switch for the pool's lights, and it still works. But Edison never swam in the pool. He disliked exercise. The body's chief job, he believed, was to carry around the brain.

When fish declined in the Caloosahatchee in 1912, Edison complained so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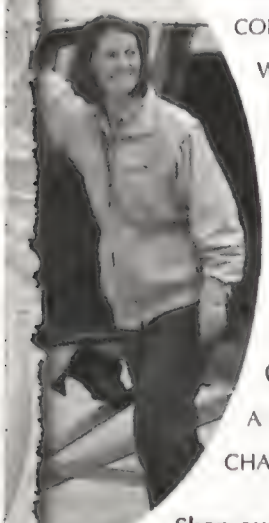

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Bob Halgrim, 94, began assisting Edison as a high school student in 1925.

angrily that Mina pulled strings to get the river stocked. She wrote to the U.S. Department of Commerce: "Mr. Edison would thoroughly enjoy the good fishing you could probably make possible." But sometimes Edison's fishing was a ruse. "When Mrs. Edison gave a party for people who wanted to meet Mr. Edison, he was likely to go out on the pier fishing," says Halgrim. "The guests would walk out on the pier, but he'd be lost in concentration over his line in the water, so they'd go back to the house. He'd smile—he didn't have any bait on the hook."

To Bob Halgrim, working for the Edisons was a higher education in itself. Seminole Lodge's distinguished visitors ranged from deep-sea explorer Charles William Beebe to Emil Ludwig, the German writer, who said Edison had "the kind of overpowering personality that conquered everyone he came in contact with." In 1928, Charles Lindbergh had to skip Edison's birthday party because he had to be in Havana. A few days later, James Newton was in the yard with Mrs. Edison when Lindbergh flew

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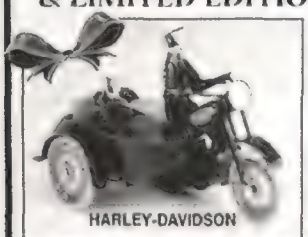

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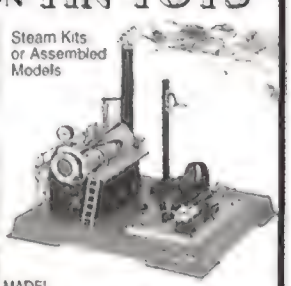

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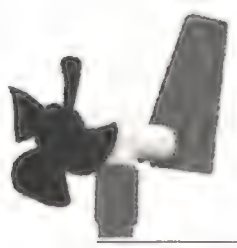
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over Seminole Lodge, dipping his wings in a salute.

"Mr. Edison was a common man with a lot of curiosity," says Bob Halgrim. Once the inventor told him, "I've made more mistakes than anyone who ever lived, but I wouldn't have done half as much if I hadn't made those mistakes."

Memoirist James Newton's father, who was Edison's doctor in Florida, had a difficult job. When Edison mentioned a stomachache during his first examination, Dr. Newton asked how long it had bothered him. Edison said, "Oh, about forty years." He would not be x-rayed because his experiments with x rays had led to an employee's death. He also disliked cigarettes and refused to employ smokers.

Edison liked to concoct nostrums in his laboratory. "When you told Mr. Edison you didn't feel good," says Bob Halgrim, "he'd go up in the lab and fix something up, and it would be the worst tasting stuff you'd ever had, but it cured you—you'd never tell him you didn't feel good again."

Edison died in New Jersey on October 18, 1931. His last audible words to Mina were, "It is very beautiful over there." At the President's suggestion, lights all over America dimmed in Edison's honor.

Bob Halgrim went on to work for the U.S. Army Corps of Engineers. But after World War II, Mina Edison told him she would give Seminole Lodge to Fort Myers as a museum if he would be curator. "I want you to come back to work for us," she said.

He did, turning the house into a museum. Visitors can cruise up the Caloosahatchee in a replica of Edison's battery-powered launch, made by the same company that built the original *Reliance*, the Electric Launch Company, now operating in Highland, New York.

In his later years, the wizard of electricity had pondered conservation issues. James Newton says Edison once told Ford and Firestone: "I'd put

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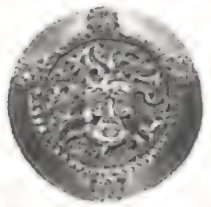

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my money on the sun and solar energy. What a source of power! I hope we don't have to wait till oil and coal run out before we tackle that. I wish I had more years left!"

At Seminole Lodge, longtime guide MaryAnna Carroll takes special guests to spots usually off-limits. In the master bedroom, for instance, is a "dry sauna," lined with lights and mirrors, designed by the Kellogg who made cornflakes. As she continues her tour, she recalls a game Edison played with his kids: "First, he'd flip through a few pages of the phone book, and then they'd quiz him—if they gave him a name, he'd give them the number, or if they gave him a number, he'd give the name."

Off the living room is a telegraph office. "Western Union gave him free access," Carroll says. "And he used this telegraph to keep in touch with all his operations." Her favorite room, upstairs where visitors do not go, is "The Doghouse," an extra bedroom. "The legend is that when Mr. Edison

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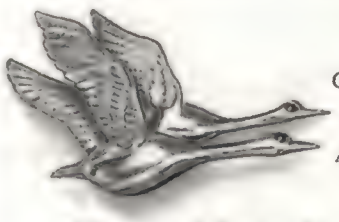

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A keen angler, Edison whiled away many afternoons fishing with his son Charles.

was in the doghouse with Mrs. Edison, he came up here," says Carroll. "But I think he used this room because he didn't sleep well." Outside is a second-story porch, overlooking the Caloosahatchee. Edison came here at dawn, Carroll believes, to watch it get light over the river.

In his home near Seminole Lodge, Bob Halgrim's guests are leaving. But his memories still flow. "If you asked Mr. Ford a question, he'd say, 'I'll tell you tomorrow,' and then he'd get the ideas of the people who worked for him. But if you asked Mr. Edison a question, he'd give you his opinion right off," says Halgrim. He beckons to Carroll to help demonstrate one of his Edison phonographs. "Wind that a few turns," he says softly.

He points to a recording cylinder inscribed "Edison Gold Moulded Records." "It's from the 1920s—'Red Wing,'" he says. From the old phonograph's horn pulses scratchy music, a voice unlike modern voices—something about the pronunciation, the tone. Bob Halgrim listens intently.

"He was so damned human!" he says. "He was so damned human!"

Richard and Joyce Wolkomir wrote recently for SMITHSONIAN *on high schools.*

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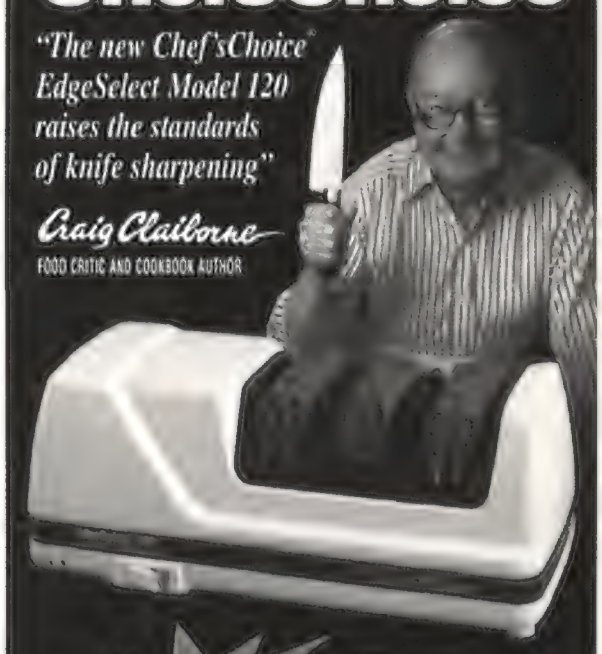

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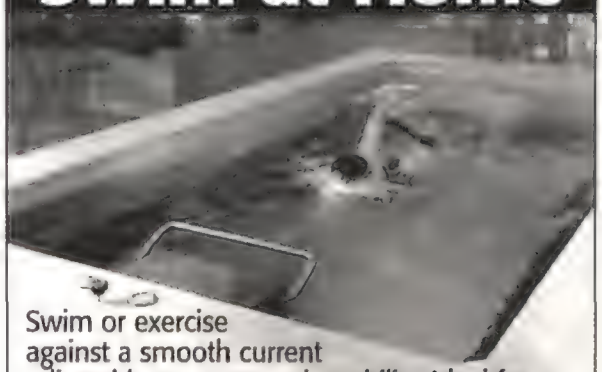

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Gift of the Whale: The Inupiat Bowhead Hunt, A Sacred Tradition

Bill Hess, Sasquatch Books,
Seattle, Washington, $40

WHAT'S LEFT FOR THE JOURNALIST who burns for the great adventure? Is there anything out there for the modern-day Henry Stanley, who longs to go beyond the edge of the map? The poles? They make commercials on the ice cap these days. Outer space? Too high-tech and bureaucratic. New Guinea? Margaret Mead went there, did that. Journalistic derring-do, alas, is not what it was. It's no longer enough just to thrust yourself out there and describe what it's like. Everything and everyplace—well, almost everyplace—has been discovered, described, photographed, maybe even understood. I remember spending half a day once finding a rancher in a godforsaken part of Wyoming who could allegedly tell me about the wild horses that rambled on his acreage. On the way out his gate I was shocked to pass two vans bearing Charles Kuralt and his television crew, on their way in.

The passing of journalistic frontiers has left a void only now beginning to be filled by a new kind of chronicler-adventurer. Bill Hess, an Alaskan writer and photographer, is one of this breed. His goal is not just to introduce us to the Inupiat Eskimos of northern Alaska and their whale-centered culture, but to experience it, become a part of it, show us what it's like from the inside. It's an assignment that calls for stamina, patience and a long-suffering deference to the people and culture he chronicles. It's no longer the journalist-as-star, like Stanley searching for Livingstone or even Hunter S. Thompson searching for, well, anything. It's the scribe as plodding, shivering, miserable tagalong, enduring the scorn of his subjects while striving mightily to fit in, and, by God, seeing it through.

When he is finally granted permission to accompany the Inupiats on their hunts out of Point Barrow on Alaska's Arctic coast, Hess' first job is to trot alongside their skin-covered boat (umiak) while a snowmobile tows it across several miles of jagged ice field. "I struggled to keep my footing, let alone protect the umiak. We plummeted down the grade toward a shard of ice that threatened to poke a hole in the umiak skin—or in me. Suddenly my foot plunged into a crack hidden by drifted snow. I flopped forward. Snow stung my face as I fell flat. I jerked my head up to see George driving on and looking back through dark glasses that only seemed to magnify his disgust." The temperature on this particular day was a relatively balmy 20 below zero.

Hess paid his dues this way for several years beginning in the early 1980s, eventually becoming accepted as a willing if somewhat clumsy hand among the Eskimo crews, who sought to bring in the five to ten bowhead whales they were permitted to take annually under the terms of a complex and controversial agreement.

Hess evokes the spare pleasures of Inupiat life, the simple fellowship and the traditional sharing of the hunt's bounty, as well as the ubiquitous dangers: one man was killed by a polar bear while strolling a village street with his girlfriend. The book's language is lean and businesslike for the most part, although it detours into mysticism now and then. The photographs, appropriately black and white, capture the twilight harshness of the land and the leathery resiliency of the people.

In 1988, the plight of gray whales trapped under the ice off Alaska made international news. Inupiat hunters cut breathing holes and comforted the stranded creatures.

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Hess focuses on the hunt for the bowhead whale. He shows us how it feels to stand in an open boat bobbing on a frozen sea, waiting to take a harpoon-gun shot at a creature the size of an 18-wheeler. He makes us feel the frustration of holding fire because the quota for the season has already been reached. One hunter, almost quivering with eagerness with an over-quota bowhead only a few yards from his boat, turns to his crewmates and cries, "Doesn't anybody have ten thousand dollars?"—the fine he'd be assessed if he struck.

The current generation have adapted a few 20th-century niceties to their ancient techniques. They use snowmobiles, outboard motors and an explosive that detonates inside the target whale. But Hess also demonstrates that the hunt ultimately remains a rudimentary test of grit and the hunter's deep knowledge of his prey.

The book's most poignant chapter is an account of three gray whales who hit the front pages internationally in 1988, when they became trapped by ice that closed off their migration route. The drama unfolded for days as underdressed reporters raced to Point Barrow. Hunters repeatedly chain-sawed holes in the ice, enabling the whales to breathe. One man described how the grays stayed at the surface of the airholes four or five times longer than they would have normally, breathing rapidly like runners after a long race. But the creatures were doomed, and when they eventually disappeared the Eskimos mourned them like fallen friends.

Hess succeeds in giving us a portrait of a world we'd probably never know otherwise, but I think his real achievement is not so much his words and pictures as his courage, sensitivity and endurance. He simply hung in, and in the end he got the job done. Henry Stanley would have understood.

Donald Dale Jackson is a writer who is based in Connecticut.

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Swampwalker's Journal: A Wetlands Year

David M. Carroll

Houghton Mifflin, $27

AT FIRST GLANCE, this book did not inspire me to run and get my reading glasses and plop down in the nearest chair, eager to get started. A year of slogging through swamps? More than 200 pages given over to caddis fly larvae, salamanders and newts? I didn't think so.

Within a few pages, however, I was captivated by David M. Carroll's graceful, lyric style, his almost superhuman powers of observation, and his obvious passion and respect for life in all its forms.

Carroll began his love affair with wetlands and all that lives and grows there (this book is the third in what he calls his "wet sneaker trilogy," preceded by *The Year of the Turtle* and *Trout Reflections*) when he was 8 years old, a recent transplant from an urban environment who suddenly "entered the turtle's world."

Carroll is as much writer as naturalist, describing the wetland world he has followed, since that childhood encounter, with such brilliant clarity that the reader often feels he's wading alongside him. There are "well-heated snakes . . . lightning-quick in their movements," painted turtles "at once newborn and half as old as time," a bear "blacker than any shadow, and shadow-silent," and pine trees that "hold hands with the wind."

Though it would be easy to do, Carroll never anthropomorphizes the myriad creatures he observes. "I do not look for human meanings out here; one who looks for human meanings in nature will never see nature," he explains. Though he admits that so many creatures benefit

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from the backup water created by dam-building beavers that he could be "tempted to think of them as being purposeful," he knows they are not. "Anything in nature that might resemble altruism comes not from intent but from the broad existential design of coevolution," he writes. "In the web of life that spins through the black universe on this blue planet, the water planet, the duty of each species is only to its own species."

In the epilogue Carroll notes, "I did not want to overwhelm readers of this book with laments and tirades," but so deep is his love of a world he sees endangered that he cannot help but gently slap the reader's wrist now and then. "We line the wetland with houses," he writes, "then ask what we can do to help the turtles." The term "wildlife management," he claims, "is an oxymoron. We should have learned long ago to simply leave the proper natural space, to respectfully withdraw and let wildlife manage wildlife." Man, he observes, is "the only species to adapt the earth to its own ends, rather than adapting itself to the terms of existence on the planet."

One spring afternoon, while marveling at creatures in various stages of metamorphosis in and around a vernal pool, Carroll wonders how he must appear to them: an ungainly two-legged creature, returning season after season, the same wader in the same pool in the same form. "What, this is what you are, for your duration on earth?" he thinks they might ask him incredulously, if they could. "There will be no new form and life within your form and life, no new limbs or set of wings to take you to another world?"

But David Carroll does traverse another beckoning world—their world, the wetland world—and he takes his readers with him on a journey they will not soon forget.

Reviewer Emily d'Aulaire is a freelancer who contributes frequently to SMITHSONIAN.

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Phenomena, Comment & Notes [p. 28]

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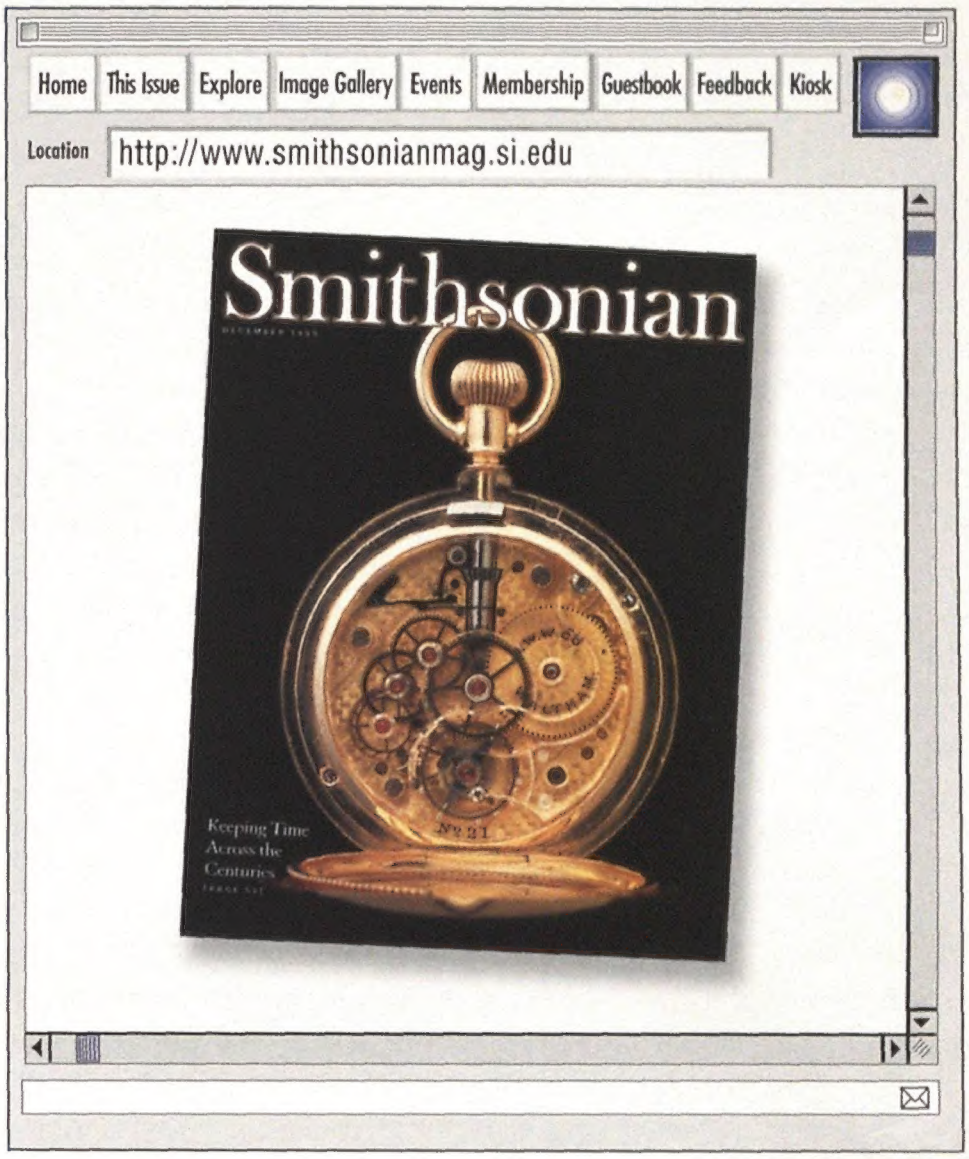

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THE LAST PAGE

The "Coo-kee" Is Made With Chocolate Chips

BY PAT PAQUETTE

THE FRENCH, ARGUABLY THE BEST cooks in the world, have taken up a fascination with American cuisine. What from the land of McDonald's, Twinkies and Spam could possibly appeal to the greatest gastronomes on earth?

Cookies.

In France, where I currently reside, there are biscuits flavored with anisette and orange flower water and, of course, the traditional meringues. But they aren't "cookies." When the French say "coo-kee"—the accent approximating that of the Cookie Monster on *Sesame Street*—they mean only one kind: chocolate chip.

The French are nuts about chocolate-chip cookies. One popular brand has a label that depicts a Texas longhorn and a likeness of Wyatt Earp. What longhorns and Earp have to do with chocolate-chip cookies eludes me, but the French are also wild about the American West. So apparently this is a logical association to a Frenchman and no doubt a coup of marketing genius.

For those here who are too busy to make chocolate-chip cookies from scratch, there are packaged mixes. I've seen an ad on television for one brand claiming to be "just like in America." It has raisins in it. Every do-it-yourself recipe I've seen here for "cookies" has raisins in it.

Recently I decided to take it upon myself to bake my French friends a batch of authentic cookies, the recipe for which can be found on any bag of chocolate chips in the United States. But they don't have chocolate chips where I live in France. They have *pépites*—sad, wrinkled balls that resemble chocolate-covered raisins but are half the size. This mystifies me, as the French have a passion for chocolate, and their "black chocolate" is a luxury, even by gourmet standards. Chocolate was imported to France from the New World in the 17th century. That's 400 years they've had to figure out how to make chips.

So I bought a block of black chocolate and started chopping. The rest of the ingredients posed their own challenges. French brown sugar is dark enough to be molasses. Light brown sugar is not brown but blond or red. French vanilla is a disappointing sugary syrup. I had to shell and chop the nuts myself by hand.

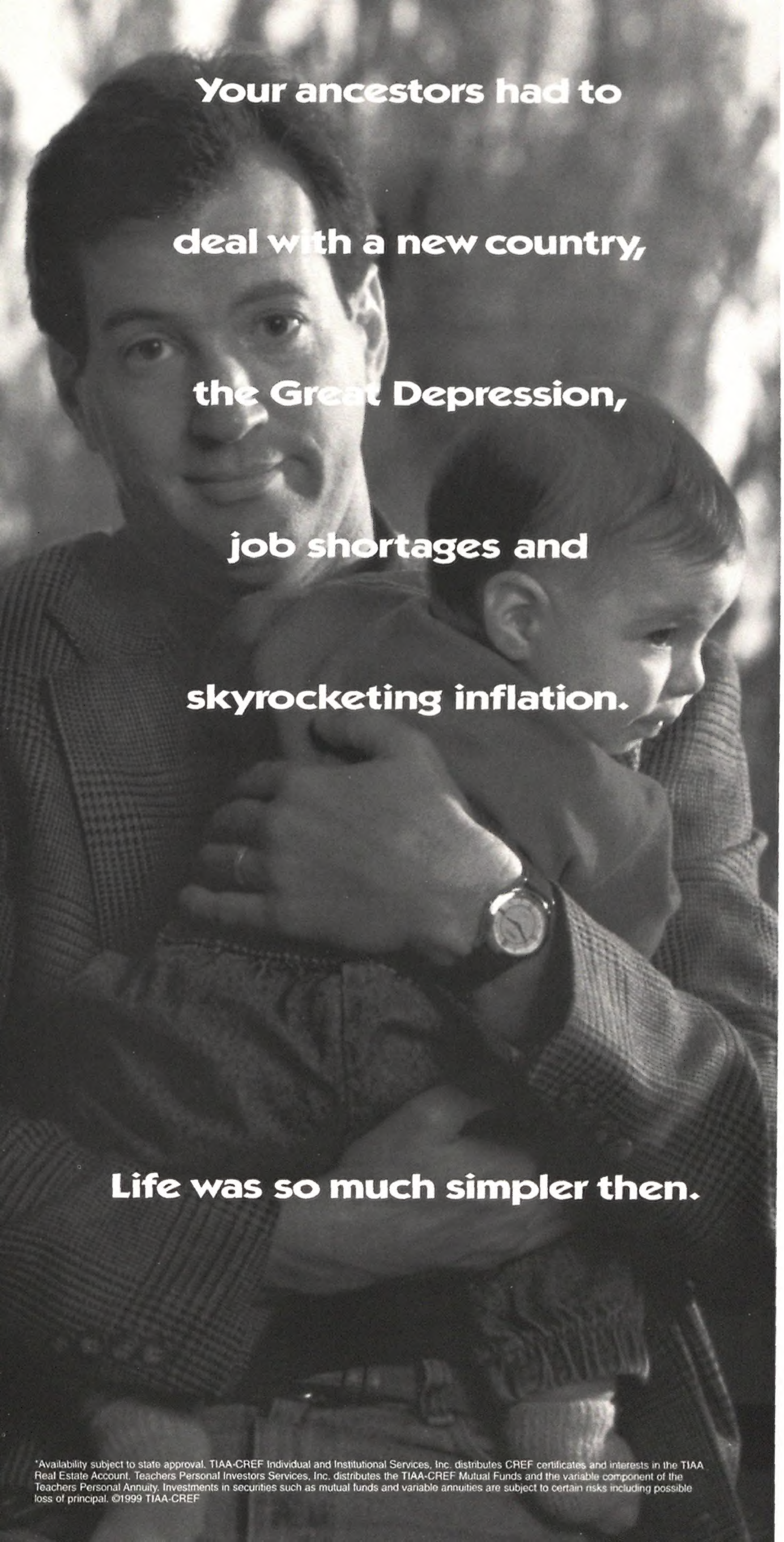
At last I presented the fruits of my labor. My friends had never tasted real homemade chocolate-chip cookies. They raved. They wanted more. I wanted more. Made with French chocolate, the American classic soared to new heights.

One rainy spring day, there was a tap on my door. It was a neighbor, Madame Remaury, who, with her customary politeness, asked if I could help her bake "coo-kees." She was having company for dinner and wanted something *très chic* for dessert.

The cookie-baking enterprise was well under way at her home by the time I arrived. Madame Remaury's daughter and her daughter's college friend Anne were assisting. Anne, it turned out, was engaged to an American and had helped bake cookies in the United States. "Do you know they actually eat the raw dough?" she said, her face screwed up in a look of total disgust.

I shrugged. I have a friend in Washington who never bothers to turn on the oven. A bowl of dough in the refrigerator can be pilfered just as easily as cookies in a jar. Hey, Anne: it beats eating garden slugs.

RICHARD THOMPSON



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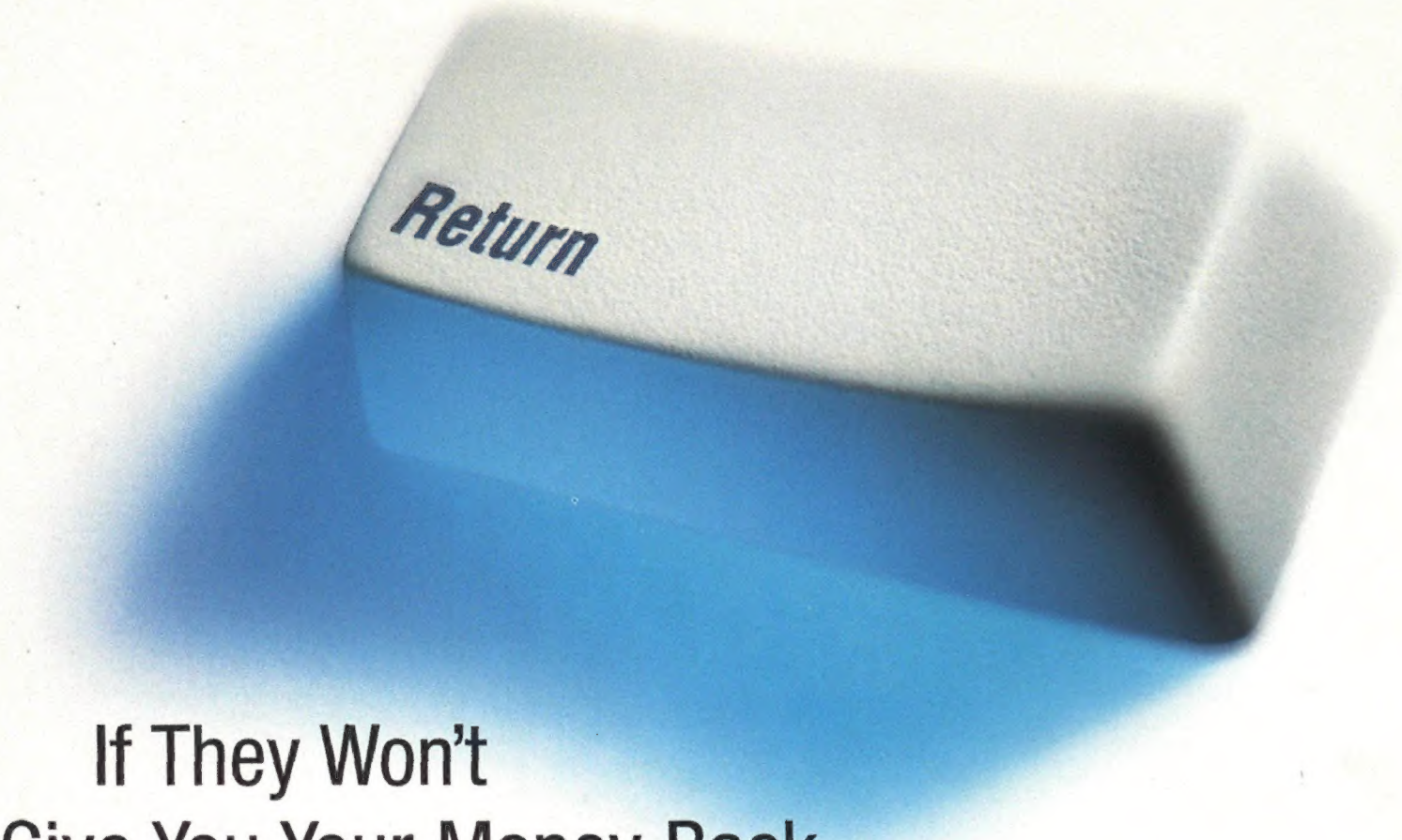

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